

The Protective Effect of Mindfulness after Meaning Threat: Controlling Implicit
Racial Biases

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A report submitted as a partial requirement for the degree of Bachelor of Psychology
with Honours at the University of Tasmania, 2016.

Statement of Sources

“I declare that this report is my own original work and that contributions of others have been duly acknowledged.”

Caitlin Cocker

Date:

Acknowledgments

I would firstly like to thank Peter Tranent, my supervisor and all-round life saver. You have helped me keep level-headed all year, through constant support and always being available to answer my never-ending questions and concerns. I could not have achieved what I have, without your knowledge, humour, honesty, and patience. You have made this year as calm as it possibly could be for me, thank you!

To my parents, whose support never falters, I cannot thank you enough. I would not have made it through these last four years without your continuous love and generosity. There are literally no words for me to explain how much I appreciate and respect you both. Special thanks to Mumma, you have played a massive role in making this project work and I am so grateful.

To all of my tremendous participants; friends, family and strangers, my project obviously would not have been possible without you. Sorry for the nagging and constant reminders, but thank you for coming through with the goods! I was and still am, overwhelmed by your generosity and willingness to help this research happen.

My beautiful friends, whose never-ending positivity helped me push through, I am so thankful. Abbey, Ashlee, and Megan, thank you for sticking around for all tears, hysterics and sillies. It has been such a rough year and I would not have made it through without you. Also a special thank you to my brothers for sharing your brains and helping me do words good.

Lastly, I would like to acknowledge my fabulous peers, I did not think this would ever end, but it is finally over! I am so proud of us, we are amazing and I am too excited for what comes next for us! Thank you for always being ridiculously supportive in every way possible.

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Abstract

Racial prejudice against Indigenous Australians contributes to their substantial marginalisation and discrimination. Implicit associations of Indigenous persons with negative connotations can unconsciously activate thoughts and behaviours that reinforce negative racial attitudes. Mindfulness research suggests focused attention on present awareness can enhance attentional control, consequently reducing automatic racial bias. Conversely, meaning threats violate normal expectancies, induce uncertainty and enhance association bias. The current study investigated whether mindfulness training protects against elevated implicit racial bias after an uncertainty threat. 112 Caucasian adults ($M = 29.17$, $SD = 12.48$) were allocated into one of four conditions: double active ($n = 26$), mindfulness active ($n = 25$), meaning threat active ($n = 30$), or double control ($n = 31$). A mindfulness exercise was followed by a meaning threat story with implicit racial bias measured through a newly constructed Indigenous Australian Race Implicit Association Test. No significant interaction of racial bias was revealed across conditions ($p = .858$, $\eta_p^2 = 0.00$). The hypothesis that mindfulness training would reduce racial bias after meaning threat was not supported. 10-minutes of non-mindful attention may result in dissipated mindfulness effects due to a transient mindful state being induced for novice meditators.

Substantial negative effects from subconscious racial attitudes toward minority groups persist in Australian society. This thesis aims to consider the effectiveness of an emerging approach to reducing implicit racial bias. The reduction of racial bias in society will optimistically lead to better outcomes for minority groups in terms of equality and social justice. Despite its multicultural existence, Australia holds a superficial egalitarian view, with institutionalised racism infiltrating minorities' environments and interactions (Sanson et al., 1998). Research investigating prejudiced attitudes concerning Indigenous Australians indicates the Australian population express racist views towards Indigenous minorities in multiple domains, including social interactions, education, and employment opportunities (Dunn, Forrest, Pe-Pua, & Smith, 2005).

Dual Attitudes Model

Prejudiced attitudes refer to the negative evaluation of a social group or individual, based on group categorisation (Pedersen, Walker, Paradies, & Guerin, 2011). The dual attitudes model proposes that individuals can simultaneously hold opposing attitudes towards a certain object or group (Wilson, Lindsey, & Schooler, 2000). These contrasting attitudes manifest through two distinct processing levels, implicit and explicit (Sturge-Apple, Rogge, Skibo, Peltz, & Suor, 2015). Implicit attitudes are characterised by reduced cognitive processing and a lack of conscious awareness (Hahn, Judd, Hirsh, & Blair, 2014). Environmental cues automatically activate implicit attitudes, triggering well-rehearsed responses (Sturge-Apple et al., 2015). In comparison, explicit attitudes are indicative of purposeful evaluations used to guide behaviour and decisions (Hahn et al., 2014). Explicit evaluations are controlled and adjusted to reflect socially accepted ideals (Sturge-Apple et al., 2015).

Divergence between attitudes emerges once personal experience begins to shape explicit attitudes (Wilson et al., 2000). For example, children's racial beliefs are initially informed by their mother's implicit attitudes (Castelli, Zogmaister, & Tomelleri, 2009) yet as the individual grows older, numerous factors such as peer influence and experience alter explicit beliefs (Wilson et al., 2000). However, as implicit attitudes are considered to reflect habitual evaluations covertly reinforced by socialised norms, overriding with explicit evaluations requires substantial cognitive resources (Dovidio, Kawakami, & Beach, 2008). Therefore, when individuals are under high cognitive load and pressured to decide, decisions can reflect implicit attitudes based on stereotypical information (Wilson et al., 2000). The dual attitudes model aids understanding of why negative socialised norms persist despite strong explicit evaluations that reflect minor prejudiced attitudes.

Racism in Australia

The transformation of acceptable racial attitudes guides consensus that the adoption of egalitarian race attitudes should occur in contemporary societies (Stepanikova, Triplett, & Simpson, 2011). Consequently, societal pressures to display equality influence explicit attitudes, whereas deep-seated in-group preferences inform implicit evaluations (Dovidio et al., 2008). Traditionally, both implicit and explicit attitudes matched, with institutionalised reinforcement of 'White people' being superior to other races (Ziegert & Hanges, 2005). Research suggests that contemporary societies encourage egalitarian views while maintaining race superiority beliefs (Pedersen & Walker, 1997). Although this research is almost twenty years old, subsequent research has suggested the continuance of such attitudes in Australia (Dunn et al., 2005). Therefore, previously accepted explicit

prejudice has transformed to become modern racism, reflected in non-biased explicit racial attitudes, but underlying implicit prejudice characterised by unconscious bias (Dovidio et al., 2008). Exploration of racial attitudes in Australian populations suggests racial prejudice towards Indigenous Australians is influenced by stereotypical misconceptions (Pedersen, Dudgeon, Watt, & Griffiths, 2011; Pedersen, Griffiths, Contos, Bishop, & Walker, 2000). Dunn and colleagues (2005) found Indigenous Australians experience racism in employment and education institutions twice as often as non-Indigenous persons. Further, 43% of Indigenous Australians reported experiencing racial discrimination every day, with 37% reporting racial abuse (Dunn et al., 2005). Pedersen, Beven, Walker, and Griffiths' (2004) findings revealed that lower education levels, empathetic evaluations, and collective guilt elevated prejudice attitudes. Using factor analysis, findings also revealed lower distinction between traditional and modern views of racism than seen in American research samples. This implies substantial marginalisation of the Indigenous population in Australia. Pedersen and Walker (1997) found that although traditional and modern forms of racism in Australia differ, a moderate correlation between the two forms exists. Further, Hahn and colleagues (2014) established people display accurate estimates of their relative bias when asked to predict their IAT performance. These findings suggest individuals are potentially aware of their prejudice, but are lacking methods to inhibit the activation of implicit biases that influences attitudes and behaviours (Hahn et al., 2014). Therefore, finding interventions that successfully align individuals' implicit racial attitudes with their explicit egalitarian goals is core to reducing discrimination against Indigenous persons in Australia.

Implicit Racial Association Bias

As differential processing mechanisms are accessed for implicit and explicit attitudes, different methodological tools are required to reliably measure these distinct beliefs. Measuring explicit attitudes occurs via self-report, as the individual is required to provide thoughtful evaluations (Hahn et al., 2014). In comparison, assessment of implicit attitudes aims to reveal underlying cognitive processes and uncontrolled evaluations (Sturge-Apple et al., 2015). As racial evaluations reflect implicit attitudes and unconscious processing, contemporary racial measures assess automatic associations through tasks that restrict response time and thoughtful evaluations (Sturge-Apple et al., 2015). The Implicit Association Test (IAT) measures associative strength between a target concept and a characteristic based on accuracy and speed (Baron & Banaji, 2006). The IAT requires pairing visual images of members of a social group with ‘good’ or ‘bad’ attributes under time constraints. Response latency indicators suggest the relative strength of racial attitudes based on how quickly individuals pair stereotypical concepts against non-stereotypical associations. Theoretically, an individual with elevated racial bias will react quickly to stereotypical categorisation of White with ‘good’ and slower to non-stereotypical categorisation of Indigenous with ‘bad’ (Blanton, Jaccard, Gonzales, & Christie, 2006). This latency differentiation demonstrates individuals’ underlying racial attitudes through the relative strength of automatic stereotypical associations.

Reducing Implicit Association Bias

The inhibition of associated memory patterns is extremely difficult once they are activated (Dovidio et al., 2008), despite intention to control or limit them. An example is American police officers’ elevated shooter bias towards Black minorities.

Research indicates White participants are faster at identifying a Black target with a gun, require less perceptual information to shoot a Black target, and are more likely to label a neutral object as a gun if the target is Black (Correll, Park, Judd, & Wittenbrink, 2002). Due to stereotypical associations of Black persons with criminality, automatic racial biases pair Black people and threat, often resulting in fatal discriminatory action (Correll, Wittenbrink, Park, Judd, & Goyle, 2011). Clearly, identifying ways to reduce automaticity of responses and stereotypical association is important (Mekawi & Bresin, 2015).

Fortunately, research has consistently suggested reducing the automatic activation of implicit racial biases is possible. Kawakami, Dovidio, Moll, Hermsen, and Russin (2000) trained participants to negate stereotypical associations to examine whether inhibiting them would reduce automatic racial biases. Findings revealed a reduction in stereotypical activation that continued 24 hours after negation training. Kawakami, Dovidio, and Kamp (2005) extended this research through investigating discriminatory actions in relation to hiring decisions. Participants paired non-stereotypical attributes, such as strong and sensitive, with opposing gender categories. Overall, discriminatory decisions continued, with greater rates of hiring males above females. However, this effect was lower for those under high cognitive load. These findings suggest that although stereotypical activation may be minimised through learning to negate associations, this will not necessarily generate reduced discriminatory behaviours. Kawakami and colleagues (2005) imply that this training technique could threaten some individuals' sense of control, which may explain the unpredicted results. The current study intends to further this line of research, but aims to reduce automaticity of racial associations without any contradiction or manipulation of current, underlying attitudes. It is hypothesised that

inducing a state of increased present awareness will reduce implicit racial bias without challenging participants' existing attitudes.

Automatic Decision Mechanisms

Research explaining variations between implicit and explicit responses to racial stimuli have previously utilised the dual processing model. Schneider and Shiffrin (1977) proposed that the capacity for automatic and controlled processing of information is determined by associated memory patterns. Accordingly, automatic processing refers to a set of well-learned memory nodes activated in response to certain stimuli (Shiffrin & Schneider, 1977). This mechanism does not necessarily require applied attention due to strong associations developed through consistent pairing and learned association. The generation of stereotypical beliefs begins in early childhood with associations consistently reinforced throughout development (Gendler, 2008). Baron and Banaji's (2006) findings revealed implicit racial attitudes emerge in children aged six years old. Disassociations between implicit and explicit attitudes occur by the age of ten and maintain throughout adulthood. This highlights the effect of sociocultural norms and consequential internalisation of stereotypical associations (Baron & Banaji, 2006). Early emergence suggests strong establishment of associations later in life, due to ongoing stereotypical confirmation throughout development.

Controlled Decision Mechanisms

Researchers assessing the malleability of automatic processing (Sherman et al., 2008), challenge the assumption that automatic associations are inflexible and

uncontrollable. Historically, conceptualisations of automaticity emphasise its effortless and dominating nature, with activation proceeding despite contrary motivations and intentions (Blair, 2002). Furthermore, definitions of automaticity focused on elements such as lack of control, attention, and awareness. Research has revealed that the activation and control of automatic associations is dependent on a range of factors. Blair's (2002) review indicates that through the manipulation of attention, gaining control of automatic stereotypical associations is possible.

Focusing attention on a particular element of a stereotypical association ensures that detail is salient, consequently altering attitude activation (Blair, 2002). Mitchell, Nosek, and Banaji (2003) found focusing attention on specific, stereotypical categories reduced implicit association bias for other stereotypical categories. In their study, specific race or gender features were targeted. Attendance to racial features resulted in higher negative evaluations of Black females compared to White males. Yet when gender was salient, Black females were more positively evaluated (Mitchell et al., 2003). This suggests automatic activation of stereotypical associations depends on the salience of categorisation features. Focusing attention on information unrelated to specific stereotypical beliefs can improve response control (Blair, 2002). This is important as it illustrates the role of attention in automaticity and suggests that finding ways to enhance or reduce attention will influence the activation of stereotypical associations.

Monteith, Ashburn-Nardo, Voils, and Czopp (2002) proposed that in order to gain control over stereotypical automatic biases, individuals must learn to break habitual responses. Applying Gray and McNaughton's (2000) neuropsychological model of motivation, Monteith and colleagues explain that self-regulation is triggered by discrepancies between conscious beliefs and actual responses; an

awareness of failure to control stereotypical responses. Motivation to reduce anomalies elicits cognitive resources to regain control of reactions. When this occurs, stimuli associated with the discrepancy are internalised and control cues are established. Theoretically, this ensures that in future situations where discrepant responses might occur and automatic associations are likely activated, control cues prompt regulated responses to override automatic reactions. This regulation process is supported by research identifying that focusing on egalitarian goals unconsciously inhibits stereotypical association (Moskowitz & Li, 2011). Kawakami and colleagues (2005) suggested threatening participants' sense of control minimises the potential to reduce bias. Correspondingly, Moskowitz and Li (2011) discovered self-identification of previous attitude discrepancies improves control mechanisms and enhances capacity to reduce implicit biases. These studies suggest methods that maximise personal control are more likely to result in attitude change and alteration of biased beliefs. Further implied is the malleability of automatic biases. Enhanced application of self-regulation through cognitive resources can activate inhibitory control of stereotypical associations (Monteith et al., 2002).

The Role of Self-Regulation and Attention

Conrey, Sherman, Gawronski, Hugenberg, and Groom (2005) present a quadruple model to support the notion that implicit associations are malleable, and suggest humans can control biases through focused self-regulation. They assert that implicit decisions are determined based on four qualitatively distinct processes: whether a stimulus activates an automatic association, whether correct responses are identifiable, the capacity to overcome automatic bias and, whether biased beliefs

inform guesses (Conrey et al., 2005). Quadruple model suggests that improved self-regulation of processing occurs when necessary cognitive resources are available to inform each of these processes. Successful application of the four mechanisms creates minimal disassociation between implicit and explicit responses (Sherman et al., 2008). The model postulates that due to strong sociocultural influences, context drives regulation processes. The activation of higher levels of control processing occurs in scenarios where negative evaluations are probable, whereas private settings allow lower response control (Sherman et al., 2008). Alcohol intoxication exemplifies this regulation mechanism for stereotypical association (Sherman et al., 2008). Disinhibiting effects of alcohol result in enhanced automaticity of responses with reduced capacity to inhibit immediate reactions and integrate important contextual cues (Noël, Tomberg, Verbanck, & Campanella, 2010).

Sherman and colleagues (2008) argue the quadruple model explains impulsivity of responses. As self-regulation entails the integration of multiple dimensions of information, substantial attentional and cognitive resources are required. Superior regulation capabilities require the capacity to integrate environmental and interpersonal cues. The capacity to achieve integration is moderated by the level of attention available and exerted. Therefore, mechanisms that improve the allocation of attentional resources to required domains will allow for advanced self-regulation and control of responses.

Expectancy-Deviation Hypothesis

Oliveira, McDonald, and Goodman (2007) used event-related potentials (ERP) to establish that activation of the anterior cingulate cortex (ACC) occurs via goal

expectancy violations. Specifically, the error-related negativity (ERN) is an ERP pattern that reflects error detections. This neuronal signal acts as a performance monitoring system with feedback triggering reductions of dopamine levels in the ACC to indicate problems in task performance (Proulx, Inzlicht, & Harmon-Jones, 2012). Oliveira and colleagues discovered that elevated ERN activation is not exclusive to negative reactions. Research revealed that receiving positive feedback while expecting negative, and error feedback when expecting success, elicits a similar ACC activation. This has led to the conceptualisation of the expectancy-deviation hypothesis, which argues that when an individual receives feedback that is inconsistent with their expectations they have a strong ERN response resulting in ACC activation (Oliveira et al., 2007; Proulx et al., 2012). The implications of this finding reflect broader understandings of expectancy-violation literature. The expectancy-deviation hypothesis suggests that questioning certainty results in a neurological reaction that activates executive control and cognitive resources (Oliveira et al., 2007) to regain control and certainty (Proulx & Heine, 2009). This heightened aversive arousal is a subclinical anxiety state that induces substantial unease which humans are highly motivated to reduce (Proulx et al., 2012).

Meaning Maintenance Models

The need for humans to understand and make meaning of their world is not a new finding. Existentialist writings in the 19th century recognised the aversive state that occurred when experiences were not understandable (Proulx & Heine, 2010). Humans are motivated by a strong desire to maintain perceptions of personal control (Kay, Whitson, Gaucher, & Galinsky, 2009). Termed schemas, humans use associations between propositions to organise information (Proulx & Inzlicht, 2012).

Expectations guide effective responses to a range of experiences and these relationships are the basis for reactive behaviours and emotions. Expected relationships allow humans to feel in control of their environments with the ability to predict situational and social outcomes (Kay et al., 2009). Violations to meaning frameworks trigger psychological discomfort, motivating people to affirm meaning in any domain to restore certainty (Randles, Proulx, & Heine, 2010). The meaning maintenance model integrates all perspectives of threat-compensation literature and suggests that the different manifestations are all due to the core, psychological motivation to maintain meaning (Proulx et al., 2012).

A common response to meaning threat is to identify and affirm known associations between stimuli. If restoration of the specific exposed meaning framework is not possible, an automatic reaction is to affirm associations in an unrelated structure (Heine, Proulx, & Voh, 2006). The perceived anomaly is not resolved but the focus of attention upon a different domain that is not threatened restores sense of meaning and reduces aversive state (Randles et al., 2010). Consequently, arousal that occurs from violated expectancies can reinforce unrelated beliefs. McGregor and Marigold (2003) propose that compensation responses are defensive mechanisms used to minimise the effect of uncertainty threat. Substantial research reflects the phenomena of consolidating beliefs after questioned or challenged attitudes (McGregor & Marigold, 2003; McGregor, Zanna, Holmes, & Spencer, 2001).

Fluid Compensatory Affirmation

Ample research has found evidence for fluid compensatory processes. For example, Proulx, Heine, and Voh (2010) examined whether compensatory affirmation occurs after exposure to absurd literature and art. It was hypothesised that the unfamiliar would activate compensatory action and induce a strong motivation to seek meaning and structure. Findings revealed participants were more likely to affirm unrelated frameworks after reading an absurd story, compared to a meaningful tale. Results further established that participants exposed to absurd art reported higher personal need for structure. Randles, Inzlicht, Proulx, Tullet, and Heine's (2015) findings revealed fluid compensatory reactions follow cognitive dissonance, with reported increases of; beliefs in God, punishment of norm-violators, and extreme support for policies. These findings indicate induced uncertainty causes a state that people actively attempt to diffuse through restoring meaning in any proximate domain. Further research suggests that fluid compensatory reactions are unconscious and automatic (Van Tongeren & Green, 2010), reinforcing suggestions of an innate reaction to uncertainty (Oliveira et al., 2007).

Van Tongeren and Green (2010) identified affirmation of meaning frameworks enhances certainty while subsequently reducing desires to belong. This novel measurement of compensatory actions suggests that affirmations directly reinforce meaning with lower self-reports of meaninglessness compared to controls. Randles and colleagues (2010) investigated a novel meaning threat and established that both threats and reactions can occur without conscious awareness. Implicit exposure to meaningless word pairs resulted in implicit learning of pairings. This implies that affirmation processes are so powerful that participants can subconsciously learn patterns of responses that they are inadvertently exposed to. Proulx and Heine (2009)

similarly found implicit violations of expected associations resulted in enhanced motivation and accuracy of learning abstract pattern sequences.

Each of these studies supports the notion that violations of meaning expectancies activate compensatory affirmations, utilised to reduce aversive arousal. Objective, empirical evidence for the motivating role of aversive arousal has previously been difficult to obtain (Proulx & Heine, 2010). However, advanced physiological and neurocognitive measurement tools have revealed consistent activation of arousal and associated brain regions in response to expectancy violations (Oliveria et al., 2007; Proulx et al., 2012). Taken together, empirical and neurocognitive findings suggest meaning threats create an automatic, aversive arousal that reduces humans' capacity to make controlled decisions. Compensatory responses engage without conscious perception, often reverting to reactions informed by implicit biases. This automaticity of responding begs the question, what is the role of these affirmations in racial stereotypical activation?

Social Affirmations

Social categorisation relies on prototypical associations to guide behaviours and beliefs (Grant & Hogg, 2012). In relation to intergroup affirmations, reinforcing differences between an individual's own identity groups and out-groups can facilitate uncertainty reduction (Kay et al., 2009). Social categorisation refers to the process of defining oneself and others to enable structured understanding of the social world to clarify meaning and predictability (Grant & Hogg, 2012). Prototypical categorisation describes social knowledge and allows individuals to predict behaviours and interactions. McGregor and colleagues (2001) identified that meaning threats

significantly enhanced intergroup bias, with heightened shared identity for those similar to oneself and magnified differentiation from others. As fluid compensatory affirmation magnifies attitudinal certainty for unrelated meaning frameworks, meaning threats result in automatic confirmation of prior beliefs (Heine et al., 2006). This suggests that reinforcement of racial prejudice can occur continuously, without the individual's awareness. Therefore, when exposed to a meaning threat, individuals are likely to reinforce stereotypical racial associations if provided with such an outlet, regardless of intentions to remain egalitarian. Further, attitudes can influence discriminative behaviour without conscious awareness (Dovidio et al., 2008). Identifying ways to enhance regulation of these automatic reactions is crucial to minimise the strong stereotypical prejudice affecting Indigenous peoples in Australia.

Mindfulness

The practice of mindfulness meditation refers to applied self-regulation of attention used to recognise internal and external stimuli in a non-judgemental manner (Baer, 2003). Termed “the heart” of Buddhist meditation, mindfulness encourages refinement of attention by living in the present moment and opening the mind to experiences through acceptance (Kabat-Zinn, 2003). Recognition of emotions, perceptions and cognitions without affective evaluation is the focal point of such practice (Baer, 2003). The goal of mindfulness interventions is not to improve one's immediate position but to immerse oneself in the present moment while learning to examine thoughts and responses without finding solutions (Kabat-Zinn, 2003). Alongside awareness of experience, substantial focus on nonattachment to outcome is emphasised, allowing the identification and breakdown of routine maladaptive

responses (Kabat-Zinn, 2003). Jha, Krompinger, and Baime (2007) identified that mindfulness meditation influences attentional systems differently, depending on previous meditation experience. Specifically, they found concentrative attention was heightened in the early stages of meditation, whereas a superior form of receptive attention was developed through ongoing practice. Concentrative attention is characterised by focused attention on a particular point, for example the breath, and any deviance or distraction from the focal point is immediately directed back. In comparison, receptive attention is objectless and facilitates a state of present readiness that allows recognition and integration of all environmental cues (Jha et al., 2007). Stimuli considered distracters for novice meditators do not apply for receptive states as all experiences are incorporated into the attentional experience (Jha et al., 2007). This suggests the capacity of mindfulness training to improve attentional regulation.

Mindfulness Mechanisms Reducing Automaticity

Mindfulness has been associated with the capacity for cognitive control and self-regulation of automatic associations (Moore & Malinowski, 2009). Baer's (2003) meta-analytical review suggested that mindfulness practice has the capacity to alter thought patterns and attitudes. Moore and Malinowski (2009) found mindfulness enhances cognitive flexibility and reduces the interference of automatic associations on responses. Similarly, Hafenbrack, Kinias, and Barsade (2013) found mindfulness improves decision-making performance by reducing the influence of biased responses. Lueke and Gibson (2015) utilised quad analysis to examine error rates and patterns of response to identify that mindfulness specifically inhibits the activation of automatic associations.

The potential for mindfulness practice to reduce activation of automatic or uncontrollable responses instigated substantial research aiming to establish the underlying mechanisms. Kang, Gruber, and Gray (2013) proposed that mindfulness inhibits the unconscious engagement of specific behaviours through attentional control and cultivating awareness of the present moment. Termed de-automatization, individuals learn to disengage with automatic emotional and cognitive reactions and respond appropriately. Kang and colleagues (2013) hypothesised four components of mindfulness; awareness, attention, present focus, and acceptance. Each component contributes to de-automatization through the consequential mental processes of; reduced automatic inference processing, enhanced cognitive control, facilitation of metacognitive insight, and prevention of thought suppression and distortion (Kang et al., 2013). Activation of each component is necessary for the successful prompting of self-regulation and inhibition of habitual responses (Kang et al., 2013). This is relatable to Sherman and colleagues' (2008) assessment of quadruple model and indicates a parallel understanding of processes underlying the influence of self-regulation on control. Although these two mechanisms identify similar elements, these four aspects of mindfulness are distinct from the four parameters identified in quadruple model. Comparison does however reveal the shared response to establishing and inducing an enhanced capacity for controlled decision-making.

Neurological Support of Mindfulness Mechanisms

Moore and Malinowski's (2009) research supports conceptualisations of reduced automaticity as facilitated by attentional control. They found significant correlations between de-automatisation and the measures of acting with awareness, and accepting without judgement. Functional and structural neuroimaging research also supports

the existence of these components. A longitudinal, randomised, control study assessed self-regulation of attention and changes in neuronal activity produced by mindfulness training (Moore, Gruber, Deroose, & Malinowski, 2012). Randomisation to either a wait-list or a meditation group occurred for meditation inexperienced participants. Participants completed the Stroop Colour-Word Interference Test at three time points while ERP's were recorded. Overall, findings revealed superior attentional processing (N2) and reduced target identification resources (P3), suggesting improvements to core attentional processes. ERP results indicated an improved capacity to inhibit attentional resources towards unrelated stimuli and reduced activation of cognitive resources after 16-weeks of daily mindfulness training. The authors propose that the generalisation of mindfulness training to a visual, incongruent response task reflects far transfer effects and strong training potential (Moore et al., 2012). Neuroimaging research proposes mindfulness produces enduring brain region activation and functional improvement, reflected by far transfer of skills into novel task settings (Slagter, Davidson, & Lutz, 2011).

Teper and Inzlicht (2013) found that meditation enhances executive control due to amplification of the error-related negativity brain signal, and enhanced acceptance of emotional states. This suggests that meditators attain the capacity to rapidly identify errors and effectively accept affective states. This efficient acknowledgment of affect translates into superior capacity for executive functioning, as fewer resources are required to overcome aversive states. Improvement of the monitoring process allows executive functioning resources to focus on present awareness to identify and inhibit automatic responses (Teper & Inzlicht, 2013). This confirms neurological research and establishes an overall improvement of attentional capacity and application facilitated by mindfulness training.

As identified by Sherman and colleagues (2008), improved attention to numerous contextual details allows the inhibition of stereotypical association. Mindfulness improves present awareness and enhances available attentional resources (Kabat-Zinn, 2003). Therefore, mindfulness training can facilitate improved awareness of discrepancies between implicit and explicit racial attitudes, resulting in greater likelihood of regulated and controlled responses. In comparison to meaning threats, mindfulness utilises additional attentional resources to maximise controlled decision-making processes.

Although mindfulness does not directly achieve greater control, it allows individuals to become more conscious of what is and is not controllable through heightened awareness (Kang et al., 2013). Mindfulness practice can weaken stereotypical associations through inhibition of automaticity achieved by activating the four elements of mindfulness. Strong empirical evidence supports this claim, particularly in relation to racial stereotypes. Lueke and Gibson (2015) demonstrated that 10-minutes of mindfulness training significantly reduced the automatic activation of racial associations and implicit racial bias. Lueke and Gibson (2016) replicated measures to investigate whether reduced negative bias lead to declines in prejudiced behaviours. Discriminatory racial behaviour was measured by variation of virtual money allocations between races. Findings revealed meditators displayed significantly less discriminatory bias, with roughly identical allocation of money to both White and Black individuals (3% difference). In comparison, participants in the control conditions gave significantly more money (13%) to White than Black individuals. Elevated awareness, attention, present focus, and acceptance cultivated by mindfulness training (Kang et al., 2013) regulates racial stereotype activation.

The Current Study

Semple (2010) conceptualised attention within a dimensional continuum, with ordinary attention at some point between mindless and mindful attention.

Mindlessness refers to one extreme, distinguished by distractibility, emotional reactivity, unawareness, and focusing on the past or future. The other extreme is mindful attention, characterised by targeted focus and present moment orientation, with minimal reactivity and distraction (Semple, 2010). In relation to social categorisations and habitual responses, mindfulness disrupts immediate, automatic responses, or mindlessness, and promotes regulation of responses (Semple, 2010). Conceptualising attention following this continuum, the current study aims to instigate a behavioural demonstration of induced mindlessness and mindfulness to assess automaticity of implicit racial bias towards Indigenous Australians.

That mindfulness training reduces maladaptive responses in both clinical and experimental settings is established (Lueke & Gibson, 2015; Strauss, Cavanagh, Oliver, & Pettman, 2014). Focusing attention on present experience without judgement encourages disengagement from affective evaluations, hypothetically reducing reliance on emotional states to activate responses. In contrast, meaning threat exposure enhances reliance on automatic associations due to heightened arousal and need to affirm certainty (Randles et al., 2010). By inducing meaning threat, aversive arousal in these participants is expected to create a reliance on automatic stereotypical associations and biases (Proulx et al., 2012), the mindlessness extreme of the spectrum. Preceding meaning threat induction with mindfulness training aims to activate controlled attention to overcome automatic racial bias (Lueke & Gibson, 2015). As fluid compensatory affirmations are commonly unconscious (Randles et al., 2010), increased awareness instigated by

mindfulness should allow recognition of biases and reduce the activation of stereotypical associations. Identifying that mindfulness can reduce automatic racial associations despite elevated threat-arousal is incredibly important for discriminatory actions and biases. Mere exposure to an out-group member can activate automatic stereotypical associations (Zebrowitz, White, & Wieneke, 2008). Interracial interactions result in threatening meaning frameworks due to expectations of how people should dress, speak and look. When this is different to oneself, humans feel uncertain and consequently affirm implicit beliefs. This exposure effect is reinforced by research indicating prolonged interracial exposure reduces implicit racial bias (Kawakami, Phillips, Dovidio, & Steele, 2007). Extended interracial contact allows threatening stimuli to become familiar consequently reducing the need for meaning affirmations to diminish threat. Exposure that outlasts any potential meaning threat reduces the immediacy of such threat and minimises affirmation of stereotypical attitudes.

Aims and Hypotheses

Inducing mindfulness before meaning threat exposure will facilitate strong and practical evidence for learning to control automatic biases. As meaning threats often occur without conscious awareness (Van Tongeren & Green, 2010), people potentially activate racial biases simply by encountering someone of a different race. The current study aims to identify the protective effect of mindfulness after an uncertain experience. This element of resilience will aid understandings and establish a more realistic interpretation of mindfulness' potential. An additional aim of the current study is to create and validate an Indigenous Australian Race IAT for use in Australian populations. An existing measure of an Indigenous Australian Race IAT

is available through Project Implicit (Nosek et al., 2007). However, the images lack satisfactory consistency and validity. The images are inappropriate to establish relative stereotypical strength as the presentation features vary considerably in comparison to the White images. Three hypotheses intend to establish the resilience of mindfulness after meaning threat. It was hypothesised that:

H1. Participants in the mindfulness active and meaning threat control conditions would produce the lowest implicit racial bias, as measured by the mean Race IAT D score.

H2. Participants in the meaning threat active and mindfulness control conditions would produce the highest implicit racial bias, as measured by the mean Race IAT D score.

H3. Participants in the double active condition would produce lower implicit racial bias, as measured by the mean Race IAT D score, compared to participants in mindfulness control conditions.

Method

Participants

The present study obtained a convenience sample of 136 participants (44 men and 92 women), aged between 18 and 65 ($M = 29.61$, $SD = 12.66$). Participants were recruited from the University of Tasmania (Launceston, Hobart, and Burnie campuses) and the wider community through advertising and snowballing techniques. Students enrolled in first year psychology units received 45 minutes of research participation towards their course credit. Age, race and other relevant

demographics were collected at the commencement of the study. Those racially identifying as other than Caucasian/European were not excluded from participation however, their data was not used in further analysis. The rationale for this exclusion criterion is that the Race IAT is designed specifically for administration within majority populations to assess implicit racial attitudes towards minority members (Blanton et al., 2009). The IAT uses reaction time to assess racial bias, therefore the upper age limit of 65 and beta-blocker medication exclusions were included to minimise confounding factors, due to significantly slower reaction times for these populations (Harrington, Saxby, McKeith, Wesnes, & Ford, 2000). The initial dataset of 136 was reduced to 112 (68% female) for data analysis after race, medication, and computer malfunctioning exclusions were applied. Data sets retained in the analysis included 25 participants in the mindfulness active, 26 in the double active, 30 in the meaning threat active, and 31 in the double control condition.

Design

The present study employed a 2 (mindfulness: active, control) x 2 (meaning threat: active, control) between-subjects factorial design. Automatic stereotypical associations identified by the Race IAT were collected as the dependent variable. Covariate measures of mindfulness history and anxiety reactivity were also collected.

Materials and Procedure

Ethics approval was sought from the University of Tasmania Human Research Ethics Committee and was confirmed on the 20th of June, 2016 (Appendix A). Advertisements for participation were displayed around University of Tasmania

campuses and circulated online forums via Facebook. Interested persons were directed to contact the project authors via email. Potential participants were then sent information regarding how to conduct themselves throughout the study, including required materials and what would be expected during participation. The research email included a hyperlink to allow research completion. Allocation of a de-identified participant number protected data anonymity. An information sheet was provided and informed consent was electronically obtained before the collection of data commenced (Appendix B). Participants were randomly allocated to one of the four conditions before undertaking the baseline mindfulness and anxiety measures. In order to determine no pre-existing differences existed between the four groups, administration of the Mindful Attention Awareness Scale (MAAS; Brown & Ryan, 2003) and State Trait Anxiety Inventory FORM-Y2 (STAI-Trait; Spielberger, Gorusch, Lushene, Vagg, & Jacobs, 1983) occurred. The MAAS assesses trait mindfulness through a 15-item self-report questionnaire requiring participants to respond to how frequently they experience each item based on a Likert scale, ranging from 1 (almost always) to 6 (almost never). Summation and averaging of scores provides each participant with a mindfulness index, with higher scores indicating greater levels of trait mindfulness (Brown & Ryan, 2003).

The MAAS is the most widely cited measure of mindfulness, supported by converging evidence suggesting strong psychometric properties including test-retest reliability and convergent validity (Medvedev et al., 2016). Cronbach's alpha indicates good internal consistency, $\alpha = 0.89$, with no significant differences across sex, and suggesting overall strong psychometric validity (MacKillop & Anderson, 2007). Psychometrics for the STAI-Trait reflect strong internal consistency for both clinical and nonclinical populations ($\alpha = 0.88$ and $\alpha = 0.79$, respectively) (Stanley,

Beck, & Zebb, 1996). Strong test re-test reliability ($r = 0.84$) and convergent validity properties further validate the STAI-Trait as an appropriate measure of trait anxiety (Stanley et al., 1996).

The STAI-Trait is a self-report measure that consists of 20-items describing how people commonly feel. Responses require ratings on a 4-point Likert scale, ranging from 1 (almost never) to 4 (almost always). Summation of scores provides a trait anxiety index with higher scores indicating greater levels of trait anxiety (Spielberger et al., 1983).

Manipulations

All measures, manipulations, randomisation of tests, and data collection were managed via Inquisit by Millisecond software (version 5.0.4). Instructions were provided at the beginning and throughout each stage of the project. Four 10-minute audio recordings were utilised for the mindfulness, meaning threat and control groups (see appendix C for transcripts). Mindfulness active and control audio recordings were identical to those employed by Lueke and Gibson (2015) but were re-recorded to match voice with the meaning threat conditions. The mindfulness recording instructed participants to direct their attention and awareness to all bodily sensations, allowing any thoughts or sensations to arise without judgment or inhibition. The paired control recording requested participants' attention and consisted of neutral, natural geographic information. Consistent with Lueke and Gibson, once the mindfulness recording finished participants responded to a state mindfulness item taken from the MAAS, ("At this moment [right now] I feel like I will rush through activities without being really attentive to them" [reverse scored])

on a 9-point Likert scale, ranging from 1 (strongly disagree) to 9 (strongly agree).

The meaning threat and control audio recordings were identical conversions of the short stories used by Proulx and Heine (2009). Franz Kafka's "The Country Dentist" violates normal syntax meaning and logical progression, eliciting implicit, aversive arousal due to violations of meaning expectancy (Proulx & Heine, 2009). The paired control condition utilised a neutral recording of similar themes and readability as the original meaning threat condition, but without meaning expectancy violations.

Measurement of Implicit Racial Bias

An Indigenous Race IAT was constructed using White faces from Nosek and colleagues (2007) research, accessed from the Inquisit database. Indigenous faces matched for age and emotive details were accessed from a publicly available photography site (Radler, 2011). The photographer was contacted to request use of his images and to obtain consent of the imaged individuals. Heightened sensitivity surrounding images of deceased individuals and the impacts on Indigenous persons were recognised and an Indigenous advisor reviewed all images before construction. Creation of a new Indigenous Race IAT was required due to a lack of appropriate current resources. Project Implicit's (Nosek et al., 2007) publicly available IAT uses photographs of White people but administers Indigenous stimuli that are drawings rather than photographs. Therefore, in order to administer a valid test of implicit racial bias, the current study administered a newly constructed Indigenous Race IAT (see Appendix D for images). Following methods employed by Lueke and Gibson (2015), trials were run in the traditional 7-block format (Greenwald, McGhee, & Schwartz, 1998). Participants were instructed to pair randomised combinations of

eight positive/pleasant and eight negative/unpleasant attributes with greyscale photographs of six Indigenous and six White faces (3 men and 3 women for each 'race'). Participants used "E" and "I" keys on a standard QWERTY keyboard to classify combinations as directed by the experimenter. Target-attribute pairing blocks are counterbalanced between subjects to ensure order effects are not present (Baron & Banaji, 2006). The IAT measures implicit racism by assessing the speed and accuracy of categorising these words and faces (Greenwald, Nosek, & Banaji, 2003). Racist attitudes are informed by the relative strength of automatic association for either the compatible or incompatible categorisation (Blanton et al., 2006), with a score of zero indicating no bias. A high positive score indicates stronger Indigenous racial bias, with faster association of White with good and Indigenous with bad. Alternatively, high negative scores are indicative of faster association of Indigenous with good and White with bad (Ziegert & Hanges, 2005).

Results

Data was analysed using SPSS version 23.0. Alpha levels were set at $p < .05$ for statistical significance. The dependent variable was measured on a continuous scale with scores ranging from positive 2 to negative 2. Several factorial analysis of variance (ANOVA) tests were conducted to assess for statistically significant differences between conditions. A planned contrast was also utilised (Appendix E). Covariate analyses for baseline anxiety and mindfulness were not run as no differences were detected between groups and neither variable correlated significantly with IAT D scores.

Data Screening

Data screening established the dataset met assumptions for normal distribution and homogeneity of variance. Due to adequate variance within groups and data distribution, with all values of skewness and kurtosis well below the cut off value of positive and negative one, transformations were not completed. Identification of two outliers occurred, however, removal made no substantial influence on overall analyses, so all data points were retained.

Baseline Measures

In order to rule out any pre-existing differences between groups age and baseline levels of mindfulness and anxiety, all participants completed the MAAS and STAI before experimental manipulation commenced. There were no significant differences between groups for any factors, with all F values < 1.54 , all p values $> .209$, and all η_p^2 values < 0.04 . Table 1 presents the means and standard deviations for age and mindfulness and anxiety baseline measures for each condition.

Table 1

Means, Standard Deviations and Confidence Intervals for Age, MAAS and STAI

Baseline Measures per Condition

Measure	Condition	<i>M</i>	<i>SD</i>	95% CI
Age	Double active	30.38	13.96	[24.75, 36.02]
	Mindfulness active	29.00	12.86	[23.69, 34.31]
	Meaning threat active	28.30	11.35	[24.06, 32.54]
	Double control	29.13	12.46	[24.56, 32.54]
MAAS	Double active	3.62	0.61	[3.38, 3.87]
	Mindfulness active	3.66	0.55	[3.44, 3.89]
	Meaning threat active	3.76	0.66	[3.52, 4.01]
	Double control	3.94	0.62	[3.71, 4.17]
STAI	Double active	47.04	5.60	[44.78, 49.30]
	Mindfulness active	48.72	4.06	[47.05, 50.40]
	Meaning threat active	48.13	3.82	[46.71, 49.56]
	Double control	46.90	4.80	[45.15, 48.66]

Note. CI = confidence interval.

Manipulation Check

To assess whether the mindfulness recording successfully induced a state of enhanced attention, group differences on the state mindfulness question were analysed. The induction was successful, with participants in control conditions reporting significantly lower state mindfulness indices than those in the active

conditions, $F(3, 108) = 7.25, p < .001, \eta_p^2 = 0.17$. Violations to Levene's homogeneity of variance (4.94, $p = .003$), justified a Games-Howell post hoc procedure. This revealed no significant differences between mindfulness active and double active conditions, $p = .708$, 95% $CI_{diff} [-0.69, 1.61]$, and no difference between meaning threat active and double control conditions, $p = 1.000$, 95% $CI_{diff} [-1.52, 1.51]$. However, mindfulness active conditions were significantly different from control conditions (see Table 2 for means and standard deviations).

Table 2

Means, Standard Deviations and Confidence Intervals for State Mindfulness Scores per Condition

Condition	<i>M</i>	<i>SD</i>	95% CI
Double active	3.42	1.68	[2.75, 4.10]
Mindfulness	2.96	1.40	[2.38, 3.54]
Meaning threat	4.90	2.09	[4.12, 5.68]
Double control	4.90	2.39	[4.03, 5.78]

Note. CI = confidence interval

To establish the successful induction of meaning threat, racial bias scores for groups that were threatened were compared to those that were not. A planned contrast analysis was conducted between meaning threat active and meaning threat control conditions. Results revealed a non-significant difference of D scores between participants who received active ($n = 30$, $M = 0.51$, $SD = 0.44$, 95% CI [0.34, 0.67]) and control ($n = 31$, $M = 0.52$, $SD = 0.37$, 95% CI [0.38, 0.65]) meaning threat conditions, $t(108) = 0.8$, $p = .940$, $\eta^2 = 0.00$. Comparisons were conducted on Race IAT D scores, as an explicit manipulation check would be invalid.

Race IAT D Scores

D6 analysis was conducted as per Greenwald, Nosek, and Banaji's (2003) amended formula. Raw D scores revealed slightly weaker Indigenous/bad associations for participants in the double active (0.40) and mindfulness active (0.38) conditions, compared to participants in the meaning threat active (0.51) and double control (0.52) conditions. A 2 (mindfulness: control, active) x 2 (meaning threat: control, active) factorial ANOVA revealed no significant main effects or interaction, with all F values < 2.08 , all p values $> .153$, and all η_p^2 values < 0.02 . Table 3 displays the means and standard deviations of D scores across conditions for the interaction and main effects.

Table 3

Means, Standard Deviations and Confidence Intervals for Race IAT D Scores per Main Effects and Interaction

Effect	Condition	<i>n</i>	<i>M</i>	<i>SD</i>	95% CI
Mindfulness main effect	Active	51	0.39	0.49	[0.25, 0.53]
	Control	61	0.51	0.41	[0.41, 0.62]
Meaning threat main effect	Active	56	0.46	0.47	[0.33, 0.59]
	Control	56	0.46	0.43	[0.34, 0.57]
Mindfulness* meaning threat interaction	Double control	31	0.52	0.37	[0.34, 0.67]
	Meaning threat active	30	0.51	0.44	[1.07, 1.40]
	Mindfulness active	25	0.38	0.48	[0.18, 0.58]
	Double active	26	0.40	0.50	[0.20, 0.60]

Note. CI = confidence interval

Race IAT Accuracy Rates

In order to rule out potential confounds, accuracy rates were assessed across conditions. A 2 (mindfulness: active, control) x 2 (meaning threat: active, control) factorial revealed no significant main effects or interaction, with all *F* values < 2.10, all *p* values > .659, and all η_p^2 values < 0.02. Table 4 displays average accuracy percentages for each condition across the mindfulness*meaning threat interaction.

Table 4

*Mean IAT Accuracy Percentages for Mindfulness*Meaning Threat Interaction*

Measure	Condition	<i>M</i>	<i>SD</i>	95% CI
Mindfulness*meaning threat interaction	Double control	93.71	5.68	[91.63, 95.79]
	Meaning threat active	93.17	4.26	[91.58, 94.76]
	Mindfulness active	92.70	6.75	[89.92, 95.48]
	Double active	95.06	4.16	[93.39, 96.74]

Note. CI = confidence interval

Race IAT Testing Conditions

Participants either completed the study in the presence of the experimenter or online. To establish testing conditions did not confound Race IAT scores a 2 (observation: yes, no) x 4 (condition: double active, mindfulness active, meaning threat active, double control) factorial ANOVA was conducted on D scores. Findings revealed no significant main effects or interaction, with all F values < 0.96 , all p values $> .384$, and all η_p^2 values < 0.03 . D scores were equal across observation and manipulation conditions. Due to the small end numbers, ability to detect even a small effect size is compromised. However, these results suggest no effect of supervisor or test condition on racial IAT performance.

Race IAT Discrimination Bias

In order to establish that discrimination bias occurred in this population, a comparison of Race IAT studies was conducted. Due to the lack of Indigenous

Australian IAT research, comparison was conducted on a study investigating implicit racial bias towards African Americans faces. Three mean D scores were obtained from Smith-McLallen, Johnson, Dovidio, and Pearson (2006). These groups received no manipulation and are comparable to the double placebo condition in the current study. Smith-McLallen and colleagues (2006) reported mean D scores of 0.45 ($n = 67$, $SD = 0.36$), 0.41 ($n = 47$, $SD = 0.36$), and 0.46 ($n = 77$, $SD = 0.37$). These values are equivalent to the 0.52 ($n = 31$, $SD = 0.37$) revealed in the condition that received no manipulation.

Discussion

The current research aimed to establish the resilience of mindfulness after uncertainty exposure. Three hypotheses intended to examine this relationship. Firstly, it was hypothesised that compared to all other conditions, the mindfulness active and meaning threat control condition would elicit the lowest Race IAT scores. Secondly, participants in the meaning threat active and mindfulness control condition would produce the highest Race IAT scores. Lastly, participants who received both an active mindfulness and meaning threat manipulation would produce lower Race IAT scores than those in mindfulness control conditions. Although findings revealed the hypothesised trend of elevated associations of Indigenous/bad and White/good for mindfulness control conditions, variation was not significant and effect sizes were negligible.

Therefore, support for a brief mindfulness exercise protecting participants from elevated implicit racial bias following a subsequent meaning threat was not found. Participants who received both active mindfulness and meaning threat manipulations

produced similar Race IAT scores to those in the mindfulness active, meaning threat active, and double control conditions. However, findings revealed support for the secondary aim, to establish a valid Race IAT for use in Australian populations. Participants in the double control condition produced a mean Race IAT score of 0.52, which is comparable to previous grayscale, Race IAT research (Smith-McLallen et al., 2006). This comparison demonstrates the generation of a normative discrimination bias in the current study, and indicates the Indigenous Race IAT successfully elicited a discrimination bias. These comparisons further support the finding that any mindfulness induction effect had dissipated after the meaning threat manipulation, with parallel mean IAT scores across each condition. No differences of IAT accuracy across conditions were revealed with comparable category identification precision in the double control and double active conditions. This similarity implies that regardless of manipulation, participants accurately categorised the images of the IAT. These findings provide additional validity to the newly constructed Indigenous Australian Race IAT.

The current study followed similar methodological features to Lueke and Gibson (2015) and hypothesised that congruent with their findings, the mindfulness active conditions would display lower implicit racial bias, as measured by an IAT. The present findings did not support this, with no significant difference between active and control mindfulness groups. The addition of a further 10-minute recording in the current study conceivably explains this null replication. As administered by Lueke and Gibson, a single state mindfulness question, modified from the MAAS (Brown & Ryan, 2003), assessed successful mindfulness induction. Analysis of state mindfulness revealed similar findings to Lueke and Gibson, with significantly higher state mindfulness reports from mindfulness active participants, compared to

mindfulness control participants. This implies an effective generation of mindful attention, equivalent to that produced in previous research. However, in the current study higher state mindfulness did not transfer onto reduced implicit racial bias as measured by the Race IAT. Therefore, although the present findings did not reveal a reduction in racial bias as expected, this is potentially a reflection of the further 10-minutes of attention to a non-mindful stimulus. The literature does not comment on how long mindful effects might last although systematic assessment of expected persistency is important to identify the resilience elements of such exercises (Lueke & Gibson, 2015). The conclusion that the mindfulness effect dissipated due to the further recording is not consistent with previous research.

A single, brief mindfulness session can improve immediate capacity to allocate attention and consequently, enhance self-regulation and reduce biased responding. Hafenbrack and colleagues (2013) who employed a 15-minute mindfulness exercise that reduced participants' attention to factors outside of their control and reduced biased decision-making illustrate this. Similarly, Lueke and Gibson (2015) demonstrated the immediacy of mindfulness effects on reducing activation of implicit racial bias after a 10-minute mindfulness recording. Understanding the current finding of dissipation of this immediate effect is enhanced by comparison to existing research, suggesting self-regulation capabilities are superior for individuals with greater mindful experience.

Jha and colleagues (2007) compared attentional subsystem improvements for experienced and novice meditators and found that both groups improved, yet different attentional elements were enhanced depending on existing mindfulness practice. The authors speculate that learning to disengage distracted thoughts, initially developed in early practice, enables a heightened capacity to orient, direct

and limit attention to various stimuli. Receptive attentional states enable numerous environmental cues to enter experience without distraction or exhaustion of cognitive resources. In the current study, novice meditators were required to employ mindful skills identified by Jha and colleagues to develop only through experienced meditation. Exposure to the meaning threat required participants to remove the focal breath while maintaining mindful state and paying attention to new, incoming information. Experienced meditators do not need to explicitly pay attention to sustain focus, whereas novice meditators must develop skills to accept stimuli while simultaneously maintaining focus and attention. This clarifies why in the current sample only acute mindfulness effects were activated. The transient mindful state induced in novice meditators reflects a concentrative attentional state that is interrupted by attentional shifts from the focal point. It is understandable that the capacity to maintain the mindful state faltered after 10-minutes of non-mindful attention for inexperienced participants.

This was the first known study to use meaning threats and Race IAT's to assess manipulation of implicit racial associations. Therefore, the current study investigated a novel manipulation of meaning threat on Race IAT. It also provided novel examination of a meaning threat through means of an audio recording. McGregor and colleagues (2001) identified that mortality salience (meaning threat) strengthened both in-group preference beliefs and discrimination toward minorities. Although the current research hypothesised that meaning threat active groups would elicit a cognitively anxious state, consequently elevating stereotypical associations, findings were not supportive. There are several possible explanations for this. Firstly, Sherman and colleagues (2008) emphasise the role of context in the mechanisms of self-regulation. To activate the four processes of controlled attention, individuals

must pay regulated attention to substantial elements of information (Conrey et al., 2005). Mindless attention requires disregard and reactivity to stimuli, characterised by unfocused attention (Semple, 2010). Due to the auditory nature of the meaning threat task and context of psychological research, induced mindlessness was potentially not achievable. Previous research employing this stimulus has presented it in text, rather than an audio recording. Receiving auditory information with the expectation that it will need to be remembered may have resulted in focusing attention on numerous parts of information that does not occur when visually analysing the stimulus. Due to elevated cognitive resources demanded to hear, process, and remember the information, a self-regulation process may have unintentionally been activated (Sherman et al., 2008). In order for fluid compensatory affirmations to occur, uncertainty arousal must be triggered (Randles et al., 2010). Potentially, the current study did not induce mindless attention, which resulted in analogous bias scores across conditions. As this is the first study to assess the meaning threat in this form, it is beyond the current research capability to confirm this.

Implications

Allocated attention to a 10-minute recording of a bizarre story dissipated any effect of higher state mindful indicators induced from a 10-minute mindfulness session. Despite the non-activation of expectancy-deviation monitoring processes (Oliveira et al., 2007), any effects of mindful attention on reducing stereotypical associations were lost. These findings advance current understandings of mindfulness training and its utility in applied settings. As identified by Lueke and Gibson (2015) the resilience of mindfulness training is important to understand its

capacity to enable de-automatisation in everyday interactions. Although Lueke and Gibson demonstrated the power of brief mindfulness in reducing automatic activation of racial stereotypes, the current study failed to replicate this in a scenario that required the mindful effect to be maintained for a further 10 minutes. If the effect of mindfulness exercises requires immediate delivery, the practical implications are restricted.

This suggests that once off mindfulness sessions are of practical importance in circumstances where instantaneous stereotypical activations are likely to inform decisions. Lueke and Gibson (2016) found 10-minutes of mindfulness practice resulted in lower racial discrimination in a money and trust related simulation. In non-experimental settings, for example, financial decisions such as loan approvals and rental properties, brief mindfulness exercises could be productive in reducing frequent stereotypical biases surrounding race and age (Lueke & Gibson, 2015). However, findings also imply the necessity for continuous engagement in mindfulness exercises preceding interracial contact. Before each interaction involved in these situations, a mindfulness exercise could lower discriminatory action. Therefore, for settings involving intervals between mindful attention induction and decision-making processes, continued stereotypical activation and discrimination bias are likely. This fits with the mindfulness literature and proposed mechanisms of attentional change (Kang et al., 2013). However, the current research indicates that resilience of mindfulness practice for novice meditators will not transfer onto improved interracial assessments in everyday settings.

Limitations

Despite the theoretical and pragmatic relevance of the reported findings, several limitations to the current study need addressing. Two separate issues exist in relation to the meaning threat stimulus. Firstly, collection of a manipulation check for meaning threat did not occur. The threat involved listening to a recording of a short story, anticipated to induce uncertainty-threat and elevated automaticity. The rationale for this decision was informed by research indicating fluid compensatory affirmations occur largely without conscious awareness (Randles et al., 2010). As these meaning threat reactions are a secondary cognitive process that humans are generally unaware of, it is difficult to establish a subjective measure that would identify high and low levels specifically induced by the stimulus. A short anxiety or certainty questionnaire may have proved informative through direct assessment of the manipulated variable. However, previous research using these forms of manipulation do not establish such measures (Proulx & Heine, 2009), and empirical and theoretical underpinnings implied comparisons of Race IAT performance would adequately assess meaning threat induction (Kay et al., 2009).

The secondary limitation refers to whether the meaning threat stimulus successfully induced threat arousal. The current study altered Proulx and Heine's (2009) short story into an auditory stimulus. The current findings cannot confidently establish whether the null difference across active and control meaning threat conditions is due to the audio form of the induction, meaning threats not effecting IAT performance, a combination of the audio and online administration, or a combination of all of these factors. Confirmation could be achieved through a methodological clarification study. This could be accomplished by administering the meaning threat stimulus between subjects for a single session and assessing any

differences between experimental and online conditions, and a compensatory task already demonstrated to work (for example, an artificial-grammar learning task; Proulx & Heine, 2009). Findings would further elucidate the current research conclusions and inform future research utilising meaning threats.

The present study followed similar processes to Lueke and Gibson's (2015) research, however as the focus of the current research was to establish the resilience of mindfulness effects rather than its cognitive nature, quad analysis was not conducted. Partial replication may have been achievable by identifying reductions in automatic activation of racial bias following mindfulness, but this would not substantially aid interpretation of the current findings. Collection of participants' data occurred in both observed and unobserved settings in the current study. As Lueke and Gibson induced mindfulness in a controlled setting, and the present study was available online, participants' environments may have influenced results. To the extent it was possible, analysis revealed no significant variance between supervised and online participants' performance. This informs understandings about testing online and indicates that in the current research, supervision was not influential. However, the small end numbers reduced power to detect subtle effects. Nevertheless, if mindful effects are only influential in research conditions then they lack ecological validity and are pragmatically limited.

The fifth and final limitation refers to the construction of a valid Indigenous Australian IAT. The Race IAT did not measure accuracy for target face identification alone. This meant that confident assessment of the new Indigenous images eliciting precise identification rates was not possible. A direct measure of accuracy of identification for the new Indigenous faces would provide further confirmation of the

IAT's validity as an Indigenous Australian bias measure. Within the restrictions of time and capacity, the current study indicates the validity of the measure.

Future Research

The current research has suggested that in novice meditators, any potential effect of a brief mindfulness exercise dissipates after 10-minutes attention to a non-mindful stimulus. This initial examination of mindfulness' resilience promotes the requirement for further research. The next stage for this line of research requires comparing results to an experienced sample of meditators. Hafenbrack and colleagues (2013) note that future research should investigate the potential of experienced meditators and effect of mindfulness on biased decision-making. Teper and Inzlicht (2013) established significant structural and functional neural change in long-term meditators. This suggests that enduring mindfulness states initiate neuroplastic developments in attentional and cognitive brain regions (Slagter et al., 2011). A quasi-experimental design would allow the investigation of whether a strong mindfulness background allows for applied attention across tasks, without dissipated effects of mindful attention on automatic associations. Selecting a sample of either experienced meditators, or novice meditators to train across a period of time, and assessing implicit racial bias after the mindfulness and meaning threat manipulations would further explain the current findings and inform the mindfulness literature on short- and long-term retention effects. Although technically this study is possible, it is logistically out of reach of available resources.

As discussed in limitations, further validity of the Indigenous IAT should be a priority for future research as implicit bias scores are reflective of those found in

American samples using African American Race IAT's (Smith-McLallen et al., 2006). Effective investigation of implicit racial bias in Australian populations requires association measurement tools that reflect legitimate environmental cues. Therefore, employing this Race IAT in different cities around Australia will help to demonstrate its effectiveness.

Future research should also establish whether shorter meaning threat inductions are more informative of mindfulness' protective measures. The current stimulus was employed due to its unconscious influence (Proulx & Heine, 2009), yet numerous examples of meaning threats are available. Any information that causes an individual to question meaning frameworks can elicit the meaning threat response (Proulx et al., 2012). For example, quickly administered meaning threats can be a reminder of humans' mortality (Randles et al., 2010). As Race IAT's target attitudes that humans are often unaware of (Sturge-Apple et al., 2015), transparency of targeted attitudes is important to ensure explicit beliefs do not influence responses (Hahn et al., 2014). Using meaning threats that are obviously inducing some sort of threat in the individual does not implicate the transparency of IAT's, but may allow mindfulness effects to continue into the performance task. This is important, as it would provide practical implications for brief mindfulness practice. For example, comparing two and five minute meaning threats to explore the resilience of mindfulness in novice samples would suggest whether brief mindfulness is resilient against a transitory anxious state. If biases continued, it would suggest that mindfulness has little protective measure against momentary uncertainty and is unlikely to be pragmatically useful.

Conclusion

The current study did not reveal reduced implicit racial bias after a mindfulness exercise. State mindfulness scores implied a successful induction of mindfulness, but the hypothesised reductions in implicit racial bias scores were not revealed. The findings did not support the hypothesised effect of mindfulness protecting against induced uncertainty elicited by a meaning threat. Although, this null finding may be reflective of the meaning threat stimulus not inducing cognitive threat successfully. Regardless, stereotypical associations of Indigenous with bad and White with good were analogous across the four conditions. Identification of a strong racial bias occurred through the construction of an Indigenous Australian Race IAT used to assess automatic associations. Implications of the findings are; any effects of increased mindful attention dissipate after 10-minutes of attention to another stimulus in a sample of novice meditators. This suggests that in situations when known interracial contact is about to occur, a brief mindfulness exercise may reduce immediate stereotypical activation. However, this effect will not transfer onto behaviours or thought processes after the mindful attention is allocated somewhere else. The study proposes an Indigenous Australian Race IAT tool to measure implicit racial bias in Australian populations. This measurement elicits automatic associations of Indigenous with bad and identified high rates of stereotypical bias in an Australian population. Establishment of this tool is important as it equips researchers with a contextual appropriate measurement of racial bias in Australia.

Future research should conduct a similar study instead recruiting experienced meditators and comparing them to beginners. It is theoretically plausible that dissipated effects will be smaller for individuals with ongoing mindful attention and awareness. Further research into meaning threats and IAT's should employ and

experiment with varying meaning threat stimuli to allow precise investigation of mindfulness resilience against cognitive threat. Clarification of the meaning threat stimulus in the current study would provide stronger understanding of the results and implications for pragmatic application. Examining whether the failure to induce enhanced automatic association was specifically due to the meaning threats' auditory form or online induction would be informative. Follow-up investigations of validity for the newly constructed and administered Indigenous Race IAT will improve implicit racial bias identification for Australian samples.

References

- Baer, R. (2003). Mindfulness training as a clinical intervention: A conceptual and empirical review. *Clinical Psychology: Science and Practice*, 10(2), 125-143. doi: 10.1093/clipsy.bpg015
- Baron, A., & Banaji, M. (2006). The development of implicit attitudes: Evidence of race evaluations from ages 6 and 10 and adulthood. *Psychological Science*, 17(1), 53-58. doi: 10.1111/j.1467-9280.2005.01664.x
- Blair, I. (2002). The malleability of automatic stereotypes and prejudice. *Personality and Social Psychology Review*, 6(3), 242-261. doi: 10.1207/S15327957PSPR0603_8
- Blanton, H., Jaccard, J., Gonzales, P., & Christie, C. (2006). Decoding the Implicit Association Test: Implications for criterion prediction. *Journal of Experimental Social Psychology*, 42(2), 192-212. doi: 10.1016/j.jesp.2005.07.003
- Blanton, H., Jaccard, J., Klick, J., Mellers, B., Mitchell, G., Tetlock, P. (2009). Strong claims and weak evidence: Reassessing the predictive validity of the IAT. *Journal of Applied Psychology*, 94(3), 567-582. doi: 10.1037/a0014665
- Brown, K., & Ryan, R. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, 84(4), 822-848. doi: 10.1037/0022-3514.84.4.822
- Castelli, L., Zogmaister, C., & Tomelleri, S. (2009). The transmission of racial attitudes within the family. *Developmental Psychology*, 45(2), 586-591. doi: 10.1037/a0014619

- Conrey, F., Sherman, J., Gawronski, B., Hugenberg, K., & Groom, C. (2005). Separating multiple processes in implicit social cognition: The quad model of implicit task performance. *Journal of Attitudes of Social Cognition*, 89(4), 469-487. doi: 10.1037/0022-3514.89.4.469
- Correll, J., Park, B., Judd, C., & Wittenbrink, B. (2002). The police officer's dilemma: Using ethnicity to disambiguate potentially threatening individuals. *Journal of Personality and Social Psychology*, 83(6), 1314-1329. doi: 10.1037//0022-3514.83.6.1314
- Correll, J., Wittenbrink, B., Park, B., Judd, C., & Goyle, A. (2011). Dangerous enough: Moderating racial bias with contextual threat cues. *Journal of Experimental Social Psychology*, 47(1), 184-189. doi: 10.1016/j.jesp.2010.08.017
- Dovidio, J., Kawakami, K., & Beach, K. (2008). Implicit and explicit attitudes: Examination of the relationship between measures of intergroup bias. In R. Brown & S. Gaertner (Eds.), *Blackwell handbook of social psychology: Intergroup processes* (pp. 175-197). Cornwall, UK: Blackwell Publishing.
- Dunn, K., Forrest, J., Pe-Pua, R., & Smith, S. (November, 2004). *Experiences of racism in the Australian body politic: Extent, spheres, and cultural unevenness*. Paper presented at the UQ Australian Studies conference, Brisbane, Australia.
- Gendler, T. (2008). Alief in action (and reaction). *Mind and Language*, 23(5), 552-585. doi: 10.1111/j.1468-0017.2008.00352.x
- Grant, F., & Hogg, M. (2012). Self-uncertainty, social identity prominence and group identification. *Journal of Experimental Social Psychology*, 48(2), 538-542. doi: 10.1016/j.jesp.2011.11.006

- Gray, J., & McNaughton, N. (2000). *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system* (2nd ed.). New York, NY: Oxford University Press.
- Greenwald, A., McGhee, D., & Schwartz, J. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, 74(6), 1464-1480. doi: 10.1037/0022-3514.74.6.1464
- Greenwald, A., Nosek, B., & Banaji, M. (2003). Understanding and using the Implicit Association Test: I. An improved scoring algorithm. *Journal of Personality and Social Psychology*, 85(2), 197-216. doi: 10.1037/0022-3514.85.2.197
- Hafenbrack, A., Kinias, Z., & Barsade, S. (2013). Debiasing the mind through meditation: Mindfulness and the sunk-cost bias. *Psychological Science*, 25(2), 369-376. doi: 10.1177/0956797613503853
- Hahn, A., Judd, C., Hirsh, H., & Blair, I. (2014). Awareness of implicit attitudes. *Journal of Experimental Psychology: General*, 143(3), 1369-1392. doi: 10.1037/a0035028
- Harrington, F., Saxby, B., McKeith, I., Wesnes, K., & Ford, G. (2000). Cognitive performance in hypertensive and normotensive older subjects. *Hypertension*, 36(6), 1079-1082. doi: 10.1161/01.HYP.36.6.1079
- Heine, S., Proulx, T., & Voh, K. (2006). The meaning maintenance model: On the coherence of social motivations. *Personality and Social Psychology Review*, 10(2), 88-110. doi: 10.1207/s15327957pspr1002_1

- Jha, A., Krompinger, J., & Baime, M. (2007). Mindfulness training modifies subsystems of attention. *Cognitive, Affective, and Behavioural Neuroscience*, 7(2), 109-119. doi: 10.3758/CABN.7.2.109
- Kabat-Zinn, J. (2003). Mindfulness-based interventions in context: Past, present, and future. *Clinical Psychology: Science and Practice*, 10(2), 144-156. doi: 10.1093/clipsy/bpg016
- Kang, Y., Gruber, J., & Gray, J. (2013). Mindfulness and de-automatization. *Emotion Review*, 5(2), 192-201. doi: 10.1177/1754073912451629
- Kawakami, K., Dovidio, J., & Kamp, S. (2005). Kicking the habit: Effects of nonstereotypic association training and correction processes on hiring decisions. *Journal of Experimental Social Psychology*, 41(1), 68-75. doi: 10.1016/j.jesp.2004.05.004
- Kawakami, K., Dovidio, J., Moll, J., Hermsen, S., & Russin, A. (2000). Just say no (to stereotyping): Effects of training in the negation of stereotypic associations on stereotype activation. *Journal of Personality and Social Psychology*, 78(5), 871-888. doi: 10.1037//0022-3514.78.5.871
- Kawakami, K., Phills, C., Dovidio, J., & Steele, J. (2007). (Close) distance makes the heart grow fonder: Improving implicit racial attitudes and interracial interactions through approach behaviors. *Journal of Personality and Social Psychology*, 92(6), 957-971. doi: 10.1037/0022-3514.92.6.957
- Kay, A., Whitson, J., Gaucher, D., & Galinsky, A. (2009). Compensatory control: Achieving order through the mind, our institutions, and the heavens. *Current Directions in Psychological Science*, 18(5), 264-268. doi: 10.1111/j.1467-8721.2009.01649.x

- Lueke, A., & Gibson, B. (2015). Mindfulness meditation reduces implicit age and race bias: The role of reduced automaticity of responding. *Social Psychology and Personality Science*, 6(3), 284-291. doi: 10.1177/1948550614559651
- Lueke, A., & Gibson, B. (2016). Brief mindfulness meditation reduces discrimination. *Psychology of Consciousness: Theory, Research, and Practice*, 3(1), 34-44. doi: 10.1037/cns0000081
- MacKillop, J., & Anderson, E. (2007). Further psychometric validation of the Mindful Attention Awareness Scale (MAAS). *Journal of Psychopathology and Behavioural Assessment*, 29(4), 289-293. doi: 10.1007/s10862-007-9045-1
- McGregor, I., & Marigold, D. (2003). Defensive zeal and the uncertain self: What makes you so sure? *Journal of Personality and Social Psychology*, 85(5), 838-852. doi: 10.1037/0022-3514.85.5.838
- McGregor, I., Zanna, M., Holmes, J., & Spencer, S. (2001). Compensatory conviction in the face of personal uncertainty: Going to extremes and being oneself. *Journal of Personality Processes and Individual Differences*, 80(3), 472-488. doi: 10.1037//0022-3514.80.3.472
- Medvedev, O., Siegert, R., Feng, X. Billington, D., Jang, J., Krägeloh, C. (2016). Measuring trait mindfulness: How to improve the precision of the Mindful Attention Awareness Scale using a rasch model. *Mindfulness*, 7(2), 384-395. doi: 10.1007/s12671-015-0454-z
- Mekawi, Y., & Bresin, K. (2015). Is the evidence from racial bias shooting task studies a smoking gun? Results from a meta-analysis. *Journal of Experimental Social Psychology*, 61, 120-130. doi:10.1016/j.jesp.2015.08.002

- Mitchell, J., Nosek, B., & Banaji, M. (2003). Contextual variations in implicit evaluation. *Journal of Experimental Psychology: General*, 132(3), 455-469. doi: 10.1037/0096-3445.132.3.455
- Monteith, M., Ashburn-Nardo, L., Voils, C., & Czopp, A. (2002). Putting the brakes on prejudice: On the development and operation of cues for control. *Journal of Personality and Social Psychology*, 83(5), 1029-1050. doi: 10.1037//0022-3514.83.5.1029
- Moore, A., Gruber, T., Deroose, J., & Malinowski, P. (2012). Regular, brief mindfulness meditation practice improves electrophysiological markers of attentional control. *Frontiers in Human Neuroscience*, 6(18), 1-15. doi: 10.3389/fnhum.2012.00018
- Moore, A., & Malinowski, P. (2009). Meditation, mindfulness and cognitive flexibility. *Consciousness and Cognition*, 18(1), 176-186. doi: 10.1016/j.concog.2008.12.008
- Moskowitz, G., & Li, P. (2011). Egalitarian goals trigger stereotype inhibition: A proactive form of stereotype control. *Journal of Experimental Social Psychology*, 47(1), 103-116. doi: 10.1016/j.jesp.2010.08.014
- Noël, X., Tomberg, C., Verbanck, P., & Campanella, S. (2010). The influence of alcohol ingestion on cognitive response inhibition and error processing. *Journal of Psychophysiology*, 24(4), 253-258. doi: 10.1027/0269-8803/a000039
- Nosek, B., Smyth, F., Hansen, J., Devos, T., Lindner, N., Ratliff (Ranganath), K., ...Banaji, M. (2007). Pervasiveness and correlates of implicit attitudes and

stereotypes. *European Review of Social Psychology*, 18, 36-88. Accessed from <http://projectimplicit.net/nosek/stimuli/>

Oliveira, F., McDonald, J., & Goodman, D. (2007). Performance monitoring in the anterior cingulate is not all error related: Expectancy deviation and the representation of action-outcome associations. *Journal of Cognitive Neuroscience*, 19(12), 1994-2004. doi: 10.1162/jocn.2007.19.12.1994

Pedersen, A., Beven, J., Walker, I., & Griffiths, B. (2004). Attitudes toward Indigenous Australians: The role of empathy and guilt. *Journal of Community and Applied Social Psychology*, 14(4), 223-249. doi: 10.1002/casp.771

Pedersen, A., Dudgeon, P., Watt, S., & Griffiths, B. (2011). Attitudes toward Indigenous Australians: The issue of “special treatment”. *Australian Psychologist*, 41(2), 85-94. doi: 10.1080/00050060600585502

Pedersen, A., Griffiths, B., Contos, N., Bishop, B., & Walker, I. (2000). Attitudes towards Aboriginal Australians in city and country settings. *Australian Psychologist*, 35(2), 109-117. doi: 10.1080/00050060008260332

Pedersen, A., & Walker, I. (1997). Prejudice against Australian Aborigines: old-fashioned and modern forms. *European Journal of Social Psychology*, 27(5), 561-587. doi: 10.1002/(SICI)1099-0992(199709/10)27:5<561::AID-EJSP833>3.0.CO;2-3

Pedersen, A., Walker, I., Paradies, Y., & Guerin, B. (2011). How to cook rice: A review of ingredients for teaching anti-prejudice. *Australian Psychologist*, 46(1), 55-63. doi: 10.1111/j.1742-9544.2010.00015.x

- Proulx, T., & Heine, S. (2009). Connections from Kafka: Exposure to meaning threats improves implicit learning of an artificial grammar. *Psychological Science*, 20(9), 1125-1131. doi: 10.1111/j.1467-9280.2009.02414.x
- Proulx, T., & Heine, S. (2010). The frog in Kierkegaard's beer: Finding meaning in the threat-compensation literature. *Social and Personality Psychology Compass*, 4(10), 889-905. doi: 10.1111/j.1751-9004.2010.00304.x
- Proulx, T., Heine, S., & Voh, K. (2010). When is the unfamiliar the uncanny? Meaning affirmation after exposure to absurdist literature, humor, and art. *Personality and Social Psychology Bulletin*, 36(6), 817-829. doi: 10.1177/014616721036989
- Proulx, T., & Inzlicht, M. (2012). The five "A"s of meaning maintenance: Finding meaning in the theories of sense-making. *Psychological Inquiry*, 23(4), 317-335. doi: 10.1080/1047840X.2012.702372
- Proulx, T., Inzlicht, M., & Harmon-Jones, E. (2012). Understanding all inconsistency compensation as a palliative response to violated expectations. *Trends in Cognitive Sciences*, 16(5), 285-291. doi: 10.1016/j.tics.2012.04.002
- Radler, G. (2011). Indigenous Australians [Online image]. Retrieved April 20, 2016 from <http://www.garyradler.com/Stock/Indigenous-Australians/>
- Randles, D., Inzlicht, M., Proulx, T., Tullet, A., & Heine, S. (2015). Is dissonance reduction a special case of fluid compensation? Evidence that dissonant cognitions cause compensatory affirmation and abstraction. *Journal of Personality and Social Psychology*, 108(5), 697-710. doi: 10.1037/a0038933

- Randles, D., Proulx, T., & Heine, S. (2010). Turn-frogs and careful-sweaters: Non-conscious perception of incongruous word pairings provokes fluid compensation. *Journal of Experimental Social Psychology*, 47(1), 246-249. doi: 10.1016/j.jesp.2010.07.020
- Sanson, A., Augoustinos, M., Gridley, H., Kyrios, M., Reser, J., & Turner, C. (1998). Racism and prejudice: An Australian Psychological Society position paper. *Australian Psychologist*, 33(3), 161-182. doi: 10.1080/00050069808257401
- Schneider, W., & Shiffrin, R. (1977). Controlled and automatic human information processing: I. Detection, search and attention. *Psychological Review*, 84(1), 1-66. doi: 10.1037/0033-295X.84.1.1
- Semple, R. (2010). Does mindfulness meditation enhance attention? A randomized controlled trial. *Mindfulness*, 1(2), 121-130. doi: 10.1007/s12671-010-0017-2
- Sherman, J., Gawronski, B., Gonsalkorale, K., Hugenberg, K., Allen, T., & Groom, C. (2008). The self-regulation of automatic associations and behavioral impulses. *Psychological Review*, 115(2), 314-335. doi: 10.1037/0033-295X.115.2.314
- Shiffrin, R., & Schneider, W. (1977). Controlled and automatic human information processing: II. Perceptual learning, automatic attending and a general theory. *Psychological Review*, 84(2), 127-190. doi: 10.1.1.227.1856
- Slagter, H., Davidson, R., & Lutz, A. (2011). Mental training as a tool in the neuroscientific study of brain and cognitive plasticity. *Frontiers in Human Neuroscience*, 5(17), 1-12. doi: 10.3389/fnhum.2011.00017

- Smith-McLallen, A., Johnson, B., Dovidio, J., & Pearson, A. (2006). Black and white: The role of color bias in implicit race bias. *Social Cognition*, 24(1), 46-73. doi: 10.1521/soco.2006.24.1.46
- Spielberger, C., Gorusch, R., Lushene, R., Vagg, P., & Jacobs, G. (1983). *Manual for the State-Trait Anxiety Inventory (Form-Y)*. Palo Alto, CA: Consulting Psychologists Press.
- Stanley, M., Beck, G., & Zebb, B. (1996). Psychometric properties of four anxiety measures in older adults. *Behaviour Research and Therapy*, 34(10), 827-838. Retrieved from <https://www.ncbi.nlm.nih.gov/pubmed/8952126>
- Stepanikova, I., Triplett, J., & Simpson, B. (2011). Implicit racial bias and prosocial behaviour. *Social Science Research*, 40(4), 1186-1195. doi: 10.1016/j.ssresearch.2011.02.004
- Strauss, C., Cavanagh, K., Oliver, A., & Pettman, D. (2014). Mindfulness-based interventions for people diagnosed with a current episode of an anxiety or depressive disorder: A meta-analysis of randomised controlled trials. *PLoS ONE*, 9(4), 1-13. doi: 10.1371/journal.pone.0096110
- Sturge-Apple, M., Rogge, R., Skibo, M., Peltz, J., & Suor, J. (2015). A dual-process approach to the role of Mother's implicit and explicit attitudes toward their child in parenting models. *Developmental Psychology*, 51(3), 289-300. doi: 10.1037/a0038650
- Teper, R., & Inzlicht, M. (2013). Meditation, mindfulness and executive control: The importance of emotional acceptance and brain-based performance monitoring.

Social Cognitive and Affective Neuroscience, 8(1), 85-92. doi:
10.1093/scan/nss045

Van Tongeren, D., & Green, J. (2010). Combating meaninglessness: On the automatic defense of meaning. *Personality and Social Psychology Bulletin*, 36(10), 1372-1384. doi: 10.1177/0146167210383043

Wilson, T., Lindsey, S., & Schooler, T. (2000). A model of dual attitudes. *Psychological Review*, 107(1), 101-126. doi: 10.1037//0033-295X.107.1.101

Zebrowitz, L., White, B., & Wieneke, K. (2008). Mere exposure and racial prejudice: Exposure to other-race faces increases liking for strangers of that race. *Social Cognition*, 26(3), 259-275. doi: 10.1521/soco.2008.26.3.259.

Ziegert, J., & Hanges, P. (2005). Employment discrimination: The role of implicit attitudes, motivation, and a climate for racial bias. *Journal of Applied Psychology*, 90(3), 553-562. doi: 10.1037/0021-9010.90.3.553

Appendix A – Ethics Approval

Dear Mr Tranent

Ethics Ref: H0014981

Title: The effect of mindfulness training on the activation of automatic cognitive processing

This email is to confirm that the following amendment was approved by the Tasmania Social Sciences Human Research Ethics Committee on at its meeting 20/6/2016:

- Addition of Honours student Caitlin Cocker.
- Changes to Independent Variable: a meaning threat condition will be added to the project with all participants listening to a recording of a short story that violates meaning expectations.
- Changes To Dependent Variable: removal of the Stroop task and the Hiring Decision task; images of African American faces will be replaced by images of Indigenous Australian faces.
- Revised Participant Information Sheet and Consent Form.

All committees operating under the Human Research Ethics Committee (Tasmania) Network are registered and required to comply with the National Statement on Ethical Conduct in Human Research (NHMRC 2007, updated May 2015).

This email constitutes official approval. If your circumstances require a formal letter of amendment approval, please let us know.

Should you have any queries please do not hesitate to contact me.

Kind regards
Katherine

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CRICOS 00586B

Appendix B - Information Sheet and Informed Consent



Participant Information Sheet

Study Title: Controlling automatic cognitive processes

Invitation

I would like to invite you to participate in a psychology study investigating the control of automatic cognitive processes. The study is being conducted by Miss Caitlin Cocker as part of her Honours degree in Psychology at the University of Tasmania. The conduct of this study is being overseen by Mr Peter Tranent (School of Medicine).

What is the purpose of this research project?

This project examines how automatic cognitive processes affect the decisions people make.

What does participation in this research project involve?

As a participant you will be asked to fill in two self report questionnaires before listen to two 10-minute audio recordings. You will then be asked to complete a decision-making task. The first recording is a concentration task and the second recording is a short story, both will simply ask for your full attention. The decision-making task will show several faces and ask you to pair them with words. Please be aware that this test may contain images of Aboriginal and Torres Strait Islander people who may now be deceased.

If you agree to participate, the entire study should take around 45 minutes.

What are the possible benefits?

You may learn about a relaxation/concentration technique that could help improve your performance in decision-making tasks. This study hopes to contribute to a wider body of knowledge in Cognitive Psychology, and enhance understanding of automatic thought processes such as decision making.

If you are a first year psychology student, you will be credited with 45 minutes of research credit.



What are the possible risks?

There are no expected risks for participating in this study. It is not anticipated that tasks involved in this study will cause any stress, however we are testing performance, which could cause low levels of anxiety for some individuals. A full debrief will occur once the experiment is completed, but if you require more information or further support, please feel free to contact the project supervisor Peter Tranent, or freely available counselling services for current students at the University of Tasmania (Launceston: (03) 6324 3787; Hobart: (03) 6226 2697). For other support and for non-student participants, there are free 24hr counselling services available on the Mental Health Hotline (1800 332 388; Tasmanian residents only) or Lifeline on 13 11 14 (National).

What if I change my mind during or after the study?

You are free to withdraw from the study at any time before or during, without any explanation. Participant identification will be a numerical code therefore, once the study is completed there will be no opportunity to withdraw as data is collected anonymously and individual responses are unable to be traced back to you.

How will I be informed of the final results of this research project?

You may request a copy of the final results when the research has been completed. A summary of the findings will be posted on the Division of Psychology's research page (<http://www.utas.edu.au/psychology/research>). This is likely to be in late 2016. If requested a copy of the results can be sent to you, however, access to your individual data, will not be possible.

**What will happen to information about me?**

All data collected the study will be stored on a password protected computer system within the University of Tasmania. The information will only be used for this research project. This will include an honours thesis, a presentation and possible publication in an academic journal. In these publications and presentations your data will be de-identified and you will remain anonymous.

What if I have questions about this study?

If you have further questions about the study that have not been answered here please contact the head researcher; Mr Peter Tranent Peter.Tranent@utas.edu.au.

This study has been approved by the Tasmanian Social Sciences Human Research Ethics Committee. If you have concerns or complaints about the conduct of this study, please contact the Executive Officer of the HREC (Tasmania) Network on +61 3 6226 6254 or email human.ethics@utas.edu.au. The Executive Officer is the person nominated to receive complaints from research participants. Please quote ethics reference number [H0014981]."

This information sheet is for you to keep for future reference. If you would like to participate please ask the researcher for a consent form to complete.

Thank you very much for your time and attention.



Consent Form

Study Title: Controlling automatic cognitive processes

1. I acknowledge that the nature, purpose and contemplated effects of the project so far as it affects me, have been fully explained to my satisfaction by the research worker and my consent is given voluntarily.
2. The details of the procedure proposed have also been explained to me, including the anticipated length of time it will take, the frequency with which the procedure will be performed, and an indication of any discomfort, which may be expected. I understand that my involvement means:
 - Reading and completing two attitude surveys
 - Listening to two 10-minute audio tracks
 - Sitting at a computer for a period of time (estimated 30 minutes)
 - Performing a reaction time task on the computer
 - Reading several scenarios and making a choice of the best outcome
 - In total, participating in the study will take approximately 45 minutes
3. I understand that there are no foreseeable risks or discomfort associated with participating in this study.
4. I understand that I am free to withdraw from the project at any stage and any of my data that has been collected will be removed from the study.



5. I understand that I will be given a signed copy of this information sheet and consent form. I am not giving up my legal rights by signing this consent form.
6. I understand that the trial will be conducted in accordance with the latest versions of the *National Statement on Ethical Conduct in Human Research 2007* and applicable privacy laws.

Name of participant _____

Signature of participant _____ Date _____

I have explained this project and the implications of participation in it to this volunteer and I believe that the consent is informed and that he/she understands the implications of participation.

Name of investigator _____

Signature of investigator _____ Date _____

Appendix C – Manipulation Transcripts

Mindfulness Condition

Please follow the instructions on this recording, the idea is for you to relax and have a little time for yourself.

The aim of this recording is to increase awareness of your body and mind, of your whole self. It is very important to be kind with yourself, be gentle with yourself, and allow yourself to relax. You do not need to make an effort to relax, simply becoming more aware of your self will encourage relaxation. During this time there is no right way to feel. Whatever you feel is fine, because it is the true you.

It is important to pay attention to your body and mind, to recognise your thoughts and feelings and to accept them exactly as they are. See what your body tries to tell you and live with it during these moments. Simply observe yourself and notice the signs that your body and mind give you. Live in the present with your true self with any good feelings as well as with your worries and any feelings of discomfort.

Now it is the time to be with you, keep always in mind there is no right or wrong way to feel, everything is acceptable because they are your true feelings. Even if you are not feeling anything at all this is alright as well. Just accept your sensations simply because they belong to you and it is the way you feel, give yourself permission to feel and let that be just fine.

Sit on the chair provided as comfortably as you can, you may have your legs stretched out in front of you or bend them one next to the other but keep them uncrossed. You may sit up straight on the chair or sit lower in the chair, choose the

body posture that makes you feel most comfortable. Allow your eyes to close gently if this feels comfortable, but it is important to stay awake.

Listening to the instructions, just watch your body and the way your mind works. Notice your feelings and any other experience you might have. Notice that you are breathing, breath deep and fully and notice your breath flowing in and out of your body. Without trying to control it in any way, focus your attention on your breath for some moments, you're breathing.

Feel the breath that enters your body by your nostrils or by your mouth if you have it open, then become aware of your breath coming out of your body. You may feel different sensations in your whole body. With every in-breath, notice the sensations in your nostrils, in your mouth, in your lungs, in your chest or in your abdomen. You may also observe sensations with every out-breath as the air leaves your body. Observe your chest rising with the in-breath and falling with the out-breath. Become aware of the air that fills in your chest every time you breathe in and then of the sensation of emptiness that follows as the air flows out of your chest.

Now feel the breath in your abdominal area. You may want to place your hands on your abdomen. Notice that very gentle rising and falling of the breath as it enters and leaves your body. No need to control this in any way, almost letting the breath breathe itself. Notice how your tummy gently rises with each in-breath and then falls with each out-breath. Watch the air entering your abdomen and then leaving your abdomen with your hands rising and falling in the rhythm of your breath. Allow your breath to flow naturally in and out of your body without any control. Just let your breath breathe itself, no need to do anything. Simply observing it; watching the breath moving in and moving out. Just let yourself breathe kindly and be aware of

the air that keeps entering your body and leaving it in a smooth and gentle way.

Observe that every in-breath is very naturally followed by an out-breath and that every out-breath is very naturally followed by an in-breath. With no control, just let your breath do its natural cycle of in-breaths and out-breaths. Let your breath breathe on its own, be aware of this movement of breath in and out of your body and feel it.

Keep in mind that if you become distressed or uncomfortable with your feelings, thoughts or body sensations at any point during this recording it is always possible to return to this sensation of the breath moving into the body, of the breath leaving the body. Letting the breath breathe itself, not having to control it. Your breathing can become a safe place where you can return if at any time you feel uncomfortable. Return to your in-breath that is always followed by an out-breath and your out-breath that is always followed by an in-breath.

And, if you would like at this point, you may remove your hands from your abdomen, if you have placed them there, and put them alongside your body. Move your awareness away from your breathing and your chest and move it down to your abdomen, to your belly and to your stomach. Explore your abdominal area with your awareness, if you do not feel any sensation this is fine. Be aware of any tightness or looseness in your stomach, feel the muscles in your abdomen contracting or remaining still. You may even feel pain, just let the painful feelings be there and do nothing to change them. Explore all the sensations in your abdominal area, you may observe the feeling of the clothing on your tummy, you may even feel their warmth or coldness on your skin. You may realise you have no sensations in the area of your abdomen and your stomach, this is alright.

And then notice your breath, as it enters your body and goes down to your abdomen. You observe the rising of your belly as you breathe in and then its falling as you breathe out. Imagine that your abdominal area is a safe place where you can feel all the air entering your whole body and transferring this air to every part of your body. Your whole body breathes just from your abdominal area. With every in-breath imagine the air entering your stomach and from there travelling all the way down to your hips, to your thighs, and toes and from there the air travels upward towards your chest, your throat, your face and head. Then imagine the breath being in your stomach again and from your belly button, leaving your body, until the next breath comes in. Notice that this journey of the breath is done on its own, with you only having to observe it. Allow yourself to feel this journey of the breath for a few moments.

Do not try to control the breath, let it flow freely in and out of your body, encouraging a deeper state of relaxation. As you watch your breath, feel a gentle stillness and calmness, observe any thoughts or feelings without trying to control them, just let them be.

Now slowly open your eyes if they are closed and remain still. You may observe your surroundings, the room you are in right now. See the shape of the room and its colours and textures. As this recording comes to an end here, you may start moving your body gently. You may want to stretch your legs and arms, or stretch your neck. Let any calmness that you are feeling now stay with you for a little longer. Remember that if you feel uncomfortable at any time you can always return to this sensation of the breath moving into the body, the breath leaving the body. Letting the breath breathe itself, not having to control it.

Mindfulness Control Condition

The parish of Selborne lies in the extreme eastern corner of the county of Hampshire bordering on the county of Sussex and not far from the county of Surrey. It's about 50 miles south-west of London in latitude 51 and near midway between the towns of Alton and Petersfield. Being very large and extensive it abuts on twelve parishes, two of which are in Sussex: Trotton and Rogate. If you begin from the South and proceed westward, the adjacent parishes are Empshot, Newton Valence, Farringdon, Hartley Mauditt, Great Worldham, Kingsley, Headley, Bramshott, Totten, Rogate, Liss and Greatham. The soils of this district are almost as various and diversified as the views and aspects. The high part to the south west consists of a vast hill of chalk rising 300 feet above the village and is divided into a sheep-down, the high wood and a long hanging wood called the Hanger.

The covert of this eminence is altogether beech, the most lovely of all forest trees, whether we consider its smooth rind or bark, its glossy foliage, or graceful pendulous boughs. The down, or sheep-walk, is a pleasing park-like spot, of about one mile by half that space, jutting out on the verge of the hill country, where it begins to break down into the plains, and commanding a very engaging view, being an assemblage of hill, dale, woodlands, heath, and water. The prospect is bounded to the south-east and east by the vast range of mountains called the Susses-downs by Guild-down near Guildford, and by the Downs round Dorking, and Ryegate in Surrey, to the north-east, which altogether, with the country beyond Alton and Farnham, form a noble and extensive outline.

At the foot of this hill, one stage or step from the uplands, lies the village, which consists of one single straggling street, three-quarters of a mile in length, in a

sheltered vale, and running parallel with the Hanger. The houses are divided from the hill by a vein of stiff clay (good wheat-land), yet stand on a rock of white stone, little in appearance removed from chalk; but seems so far from being calcareous, that it endures extreme heat. Yet that the freestone still preserves somewhat, that is analogous to chalk, is plain from the beeches which descend as low as those rocks extend, and no farther, and thrive on them as well, where the ground is steep, as on the chalks.

At each end of the village, which runs from south east to north west, arises a small rivulet: that at the north west end frequently fails; but the other is a fine perennial spring, little influenced by drought or wet seasons called Well-head. This breaks out of some high grounds joining to Noar Hill, a noble chalk promontory, remarkable for sending forth two streams into two different seas. The one to the south becomes a branch of the Arun, running to Arundel, and so falling into the British Channel: The other to the north. The Selborne stream makes one branch of the Wey; and meeting the Blackdown stream at Hedleigh, and the Alton and Farnham stream at Tilford-bridge, swells into a considerable river, navigable at Godalming; from whence it passes to Guildford, and so into the Thames at Weybridge; and thus at the nore into the German Ocean.

Our wells, at an average, run to about sixty-three feet, and when sunk to that depth seldom fail; but produce a fine limpid water, soft to the taste, and much commended by those who drink the pure element, but which does not lather well with soap.

As the parish still inclines down towards Wolmer-forest, at the juncture of the clays and sand the soil becomes a wet, sandy loam, remarkable for timber, and infamous for roads. The oaks of Temple and Blackmoor stand high in the estimation

of purveyors and have furnished much naval timber. While the trees on the freestone grow large, but are what workmen call shaky, and so brittle as often to fall to pieces in sawing. Beyond the sandy loam the soil becomes a hungry lean sand, till it mingles with the forest; and will produce little without the assistance of lime and turnips.

In the centre of the village, and near the church, is a square piece of ground surrounded by houses and vulgarly called the Plestor. In the midst of this spot stood, in old times, a vast oak, with a short squat body, and huge horizontal arms extending almost to the extremity of the area. This venerable tree, surrounded with stone steps and seats above them, was the delight of old and young, and a place of much resort in summer evenings; where the former sat in grave debate, while the latter frolicked and danced before them.

Long might it have stood, had not the amazing tempest in 1703 overturned it at once, to the infinite regret of the inhabitants, and the vicar, who bestowed several pounds in setting it in its place again, but all his care could not avail; the tree sprouted for a time, then withered and died.

Among the singularities of this place the two rocky hollow lanes, the one to Alton, and the other to the forest, deserve our attention. These roads, running through the malm lands, are, by the traffic of ages, and the fretting of water, worn down through the first stratum of our freestone, and partly through the second; so that they look more like water-courses than roads, and are bedded with naked rag for furlongs together. In many places they are reduced sixteen or eighteen feet beneath the level of the fields; and after floods, and in frosts, exhibit very grotesque and wild appearances, from the tangled roots that are twisted among the strata, and from the

torrents rushing down their broken sides; and especially when those cascades are frozen into icicles, hanging in all the fanciful shapes of frost-work.

These rugged gloomy scenes affright the ladies when they peep down into them from the paths above, and make timid horsemen shudder while they ride along them; but delight the naturalist with their various botany, and particularly with their curious ferns with which they abound.

The manor of Selborne, was it strictly looked after, with its kindly aspects, and all its sloping coverts, would swarm with game; even now hares, partridges, and pheasants abound; and in old days woodcocks were as plentiful. There are few quails, because they more affect open fields than enclosures; after harvest some few landrails are seen.

The parish of Selborne, by taking in so much of the forest, is a vast district. Those who tread the bounds are employed part of three days in the business, and are of opinion that the outline, in all its curves and indentings, does not comprise less than thirty miles.

The village stands in a sheltered spot, secured by the Hanger from the strong westerly winds. The air is soft, but rather moist from the effluvia of so many trees; yet perfectly healthy and free from agues. The inhabitants enjoy a good share of health and longevity: and the parish swarms with children.

Should I omit to describe with some exactness the forest of Wolmer, of which three-fifths perhaps lie in this parish, my account of Selborne would be very imperfect, as it is a district abounding with many curious productions, both animal and vegetable; and has often afforded me much entertainment both as a sportsman and as a naturalist.

Meaning Threat Condition

I was in great perplexity. I had to start on an urgent journey. A boy with a severe toothache was waiting for me in a village ten miles off and thick blizzard of snow filled all the wide spaces between him and me. I had a carriage, a light carriage with big wheels, exactly right for our country roads. Muffled in furs, my bag of instruments in my hand, I was in my courtyard all ready for the journey, but there was no horse to be had, no horse.

My own horse had wandered away. My servant girl, Rose, was now running around the village trying to borrow a horse, but it was hopeless. I knew it, and I stood there forlornly, with the snow gathering more and more thickly upon me, more and more unable to move. In my gateway Rose appeared, alone, and waved the lantern. Of course, who would lend a horse at this time of night for such a journey?

I strode through my courtyard once more and I could see no way out. In my confused distress I kicked at the dilapidated door of my yearlong uninhabited pigsty. It flew open and flapped to and fro on its hinges. A steam and a smell of horses came from it. A dim stable lantern was swinging inside from a rope. A man, crouching on his behind in that low space, showed an open blue-eyed face.

"Shall I yoke up?" he asked, crawling out on all fours. I did not know what to say and merely stooped down to see what else was in the pigsty. My servant girl was standing beside me. "You never know what you're going to find in your own house," she said, and we both laughed.

"Hey there Brother, hey there Sister!" called the man, and two horses, enormous creatures with powerful flanks, one after the other, their legs tucked close to their bodies, each well-shaped head lowered like a camel's, by sheer strength of

buttocking squeezed out through the low door which they filled entirely. But at once they were standing up, their legs long and their bodies steaming thickly. "Give him a hand," I said, and the willing girl hurried to help the groom with the harnessing.

Yet hardly was she beside him when the groom clipped hold of her and pushed his face against hers. She sighed and stepped into him; on her cheek was the trail of his tongue. "You brute," I yelled in fury, "do you want a whipping?" but in the same moment reflected that the man was a stranger, that I did not know where he came from, and that of his own free will he was helping me out when everyone else had failed me. As if he knew my thoughts he took no offence at my threat but still busied with the horses, only turning around once toward me.

"Get in," he said then, and indeed, everything was ready. A magnificent pair of horses, I observed, such as I had never sat behind, and I climbed in the carriage happily. "But I'll drive, you don't know the way," I said. "Of course," said he, "I'm not coming with you anyway, I'm staying with Rose." "You're coming with me," I said to the groom, "or I won't go, urgent as my journey is. I'm not thinking of paying for it by handing my servant girl over to your lusts."

"Gee up!" he said, clapped his hands, the horses started, my carriage whirled off, I could just hear the sound of their hands on one another and I was deafened and blinded by a storming rush that steadily buffeted all my senses.

But this only for a moment, since, as if the boy's farmyard had opened out just before my courtyard gate, I was already there, the horses had come quietly to a standstill, the blizzard had stopped, moonlight all around, the boy's parents hurried out of the house, his sister behind them, I was almost lifted out of the carriage, from their confused speech I gathered not a word, in their house the air was almost

unbreathable, a neglected stove was smoking, I wanted to push open a window but first I had to look at the boy.

The youngster heaved himself up from under the feather bedding, threw his arms around my neck, and whispered in my ear, "Pull my tooth." I glanced around the room. No one had heard it. The parents were leaning forward in silence waiting for my verdict. The sister had set a chair for my handbag. I opened the bag and hunted among my instruments. The boy kept clutching at me from his bed to remind me of his entreaty. I picked up a pair of pliers, examined them in the candlelight, and laid them down again.

"Yes," I thought blasphemously, "in cases like this the gods are helpful, send the missing horse, add to it a second because of the urgency, and to crown everything bestow even a groom—" And only now did I remember Rose again; what was I to do, how could I get to her, how could I pull her away from under that groom at ten miles' distance, with a team of horses I couldn't control?

These horses, now, they had somehow slipped their reins, pushed the windows open from the outside; I did not know how. Each of them had stuck a head in at a window and, quite unmoved by the startled cries of the family, stood eyeing the boy.

The mother stood by the boy's bed and cajoled me toward it; I yielded, and, while one of the horses whinnied loudly to the ceiling, leaned my head to the boy's face, which shivered under my wet beard. I confirmed what I already knew; the boy had no teeth.

Well, this should be the end of my visit, I had once more been called out needlessly, I was used to that, the whole district made my life a torment with my

night bell, but that I should have to lose Rose this time as well, the pretty girl who had lived in my house for years almost without my noticing her—so beautiful- that sacrifice was too much to ask, and I somehow had to get it reasoned out in my head with the help of what craft I could muster, in order not to let fly at this family, which with the best intentions in the world could not restore young Rose to me.

But as I shut my bag and put an arm out for my fur coat, the family meanwhile standing together, the father sniffing at the glass of sherry in his hand, the mother, apparently disappointed in me - why, what did these people expect? - biting her lips with tears in her eyes, the sister fluttering a towel, I was somehow ready to admit conditionally that the boy might have teeth after all.

I went toward him, he welcomed me smiling, as if I were bringing him a delicious candy- ah, now both horses were whinnying together. The noise, I suppose, was ordained by heaven to assist my examination of the boy - and this time I discovered that the boy did indeed have teeth. In his right molar, near the back, was an open cavity, dark brown, in many variations of shade, dark in the hollows, lighter at the edges, softly granulated, open as a surface mine to the daylight. That was how it looked from a distance.

But on a closer inspection there was another complication. I could not help a low whistle of surprise. Worms were wriggling from their fastness in the interior of the cavity towards the light, with small white heads and many little legs.

The family was pleased; they saw me busying myself; the sister told the mother, the mother the father, the father told several guests who were coming in, through the moonlight at the open door, walking on tiptoe, keeping their balance with

outstretched arms and singing, "Will you pull his tooth?" That is what people are like in my district. Always expecting the impossible from the dentist.

Then my coat was off and I looked at the family quietly, my fingers in my beard and my head cocked to one side. I was altogether composed and equal to the situation and remained so, although it was no help to me, since they now took me by the head and feet and carried me to the boy's bed. They laid me down in it next to the boy. Then they all left the room; the door was shut; the singing stopped; clouds covered the moon; the bedding was warm around me; the horses' heads in the open windows wavered like shadows.

But now it was time for me to think of escaping. The horses were still standing faithfully in their places. My clothes, my fur coat, my bag were quickly collected; I didn't want to waste time dressing; if the horses raced home as they had come, I should only be springing, as it were, out of this bed and into my own.

Meaning Threat Control

I was becoming extremely worried. I had to set out to help a young boy who had a terrible toothache, but a morning snowstorm had made the roads surrounding my home nearly unpassable. To make matters worse, my horse had recently escaped from the barn, so while I had a sleigh, it wasn't going to be of any use.

The young boy with the toothache lived in a village several miles away, so there was no possibility of my walking there in this weather. I had sent my housekeeper, Rose, into town to see if I could borrow someone's horse, but it didn't seem likely that anyone would lend me their horse in this terrible weather.

I paced and paced around the courtyard of my home, waiting for Rose to arrive with some news. It had begun snowing again, the wind was picking up, and night was falling. I began to feel like the situation was hopeless. In frustration, I kicked open the door of my home and cursed to myself.

I had just finished pulling off my boots when I heard Rose's voice calling from the courtyard. I ran outside and saw her standing at the gate holding a lantern and smiling excitedly. Standing behind her was the local postman, John Cheevers, who held the reigns of an enormous horse that he used to pull his mail cart. I couldn't believe our good fortune!

"You aren't going to get very far in your socks!" called Cheevers, and just then I realized that I had forgotten to put my boots back on. We all laughed as Rose fetched them for me. Cheevers began to harness the horse to my sleigh and I began to bundle up for the trip. Even with a sturdy horse, this was going to be a long journey in the growing darkness and I had to make sure that I was prepared for the worst.

As Rose began packing the sleigh with supplies, I could not help but notice both her and Cheevers stealing glances at one another in the dim lantern light. I had suspected for some time that Rose was smitten with this young postman, and I imagined that it was no coincidence that she had gone to him for help in our hour of need.

When all of the supplies were packed and the horse harnessed, I climbed onto the sleigh and prepared to set out. Cheevers began to climb onto the sleigh with me, but I waved him away. "You've done enough, John. Why don't you take Rose into town and have a nice meal. It's my treat." I tried to hand Cheevers a few dollars, but he politely refused the money.

"Alright," I said, "have it your way. Just make sure that you have her back in time to fix me my own dinner when I return." Cheevers promised that he would, and Rose held his hand tightly in hers. "Gee up!" I cried, and the horse lurched forward.

By now the night was settling in, and the wind was howling through the trees. My lantern was barely able to penetrate the sea of blowing snow, and the road I was following was lost under a thick blanket of white. I followed the tree-line as I made my way through the woods, though it seemed like I had travelled a long time without making a great deal of progress.

Though the horse was well-trained to pull heavy loads through winter storms, he was clearly labouring to make his way through this blizzard. The snow was nearly up to the horse's knees, and it was falling even more heavily than when I had first begun my journey. I considered turning back and returning home, but I was not sure if I was closer to my destination or my own warm bed.

After what seemed like hours, I finally spied what appeared to be dim lights through the howling, swirling whiteness that surrounded me. Surely, I must have arrived at the village! As I drew nearer, I could make out the form of a young woman holding a lantern and a small shack behind her that seemed nearly buried in snow. “Over here!” she yelled, and waved the lantern over her head to guide me.

The horse was by now exhausted, and a thick steam arose from his body as he shuddered to a stop in front of the shack. I slowly pulled myself from the sleigh and grabbed hold of my bag of dental tools and medical supplies. “It’s my son,” the woman cried, “he has a terrible toothache and he’s been moaning about it for days!”

I followed the woman into the shack and was surprised at what I saw. Despite the tiny confines of the room, an entire family greeted me with expectant, worried faces. There were two small girls, the young woman and her husband, and what appeared to be a grandmother and grandfather, all huddled around a small boy lying in a small bed by the fireplace.

I hastily introduced myself as the dentist they had sent for, and asked if I could examine the boy. The family spent several moments staring at me in silence. Often, rural people are somewhat awestruck by doctors whom they treat with a kind of wonder, understanding that we are here to help, but not having any understanding of our knowledge or craft.

Finally, the mother motioned me silently towards the young boy, who appeared to be in terrible pain. His left cheek was swollen, and he let out a low moan as I sat on a stool beside his bed. “Can you open your mouth?” I asked, and he shook his head ‘no’. Very gently, I helped the boy ease open his clenched jaw, and what I saw confirmed what I had feared; his left molar was badly decayed.

“Is there anything you can do to fix the tooth?” the mother asked. I explained to her that the tooth was in too poor a condition and would need to be pulled at once. At this news, the family looked surprised and disappointed. I’m not sure what they were expecting I would be able to do for the boy, and it is possible that they had overestimated a dentist’s abilities.

“Pull the tooth?” cried the grandfather. “We could have done that ourselves, without wasting time and money on you coming out here!” Given the trouble I had gone to in making the trip to help this boy –without the expectation of payment– I was more than a little annoyed with the older man’s remarks, and made no effort to conceal my annoyance.

“Please, just do what you can,” said the mother. She put her hand on my shoulder and shot the older man an angry look. He sheepishly stepped away and reached into an old cloth sack. “I’ve been saving this for an emergency,” he said, and pulled out a bottle of brandy. “This should warm you up.” He handed me the bottle and I courteously took a swig of the liquor, which did make me feel a little better. This also seemed to put the family at ease.

I reached into my dental bag and went to work. Of course, things would have been easier if we had been in my office in town, but I was able to make do. With little difficulty I was able to remove the young boy’s rotten tooth, though not without great discomfort for the child. Unfortunately, that couldn’t be helped in these difficult circumstances, and I knew that he would soon be feeling much better.

The older man tried to hand me a few dollars, but I politely refused the sum of money which most likely represented their earnings for the week. Instead, I told them that they might do me a favour and allow me to spend the night rather than

trying to return home in this snowstorm. They readily agreed, and I was soon fast asleep, propped up on the stool leaning against the boy's bed.

By morning, the sky had cleared and it was safe for me to return. The family provided me with a hot bowl of porridge and a strong cup of coffee, and I was soon my way back home. By noon I had arrived back in my courtyard, and after I led the horse into the barn, I entered my home and called out to Rose to let her know that I had arrived safely.

In place of a reply, there was a note on the kitchen table which read "Dear Dr. Gable, John has asked me to marry him and I have accepted. We have gone into town to find Reverend Jones. John feels bad that I will no longer be working for you, but he says that you can keep his horse. Rose. PS. Sorry I forgot to leave your dinner before I left."

I laughed and put the note into my pocket.

Appendix D – Race IAT Images

White Face IAT Stimuli



Indigenous Face IAT Stimuli

Appendix E – SPSS Data Output

Mindfulness Manipulation Check

ANOVA

Manipulation_check

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	83.534	3	27.845	7.251	.000
Within Groups	414.716	108	3.840		
Total	498.250	111			

Test of Homogeneity of Variances

Manipulation_check

Levene Statistic	df1	df2	Sig.
4.941	3	108	.003

Multiple Comparisons

Dependent Variable: Manipulation_check

Games-Howell

(I) Condition	(J) Condition	Mean Difference (I-J)	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
double condition	mindfulness	.463	.432	.708	-.69	1.61
	meaning threat	-1.477 [*]	.504	.025	-2.81	-.14
	double placebo	-1.480 [*]	.540	.040	-2.91	-.05
mindfulness	double condition	-.463	.432	.708	-1.61	.69
	meaning threat	-1.940 [*]	.473	.001	-3.20	-.68
	double placebo	-1.943 [*]	.512	.002	-3.30	-.58
meaning threat	double condition	1.477 [*]	.504	.025	.14	2.81
	mindfulness	1.940 [*]	.473	.001	.68	3.20
	double placebo	-.003	.574	1.000	-1.52	1.51
double placebo	double condition	1.480 [*]	.540	.040	.05	2.91
	mindfulness	1.943 [*]	.512	.002	.58	3.30
	meaning threat	.003	.574	1.000	-1.51	1.52

*. The mean difference is significant at the 0.05 level.

Meaning Threat Manipulation Check

Descriptives

D_score

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
double condition	26	.401962	.5026566	.0985791	.198935	.604989	-.7223	1.3033
mindfulness	25	.380094	.4792843	.0958569	.182255	.577933	-.7081	1.2853
meaning threat	30	.509144	.4426643	.0808191	.343850	.674437	-.6082	1.0842
double placebo	31	.517847	.3727420	.0669464	.381124	.654570	-.2800	1.2475
Total	112	.457865	.4462384	.0421656	.374311	.541419	-.7223	1.3033

Test of Homogeneity of Variances

D_score

Levene Statistic	df1	df2	Sig.
1.606	3	108	.192

Contrast Tests

			Value of Contrast	Std. Error	t	df	Sig. (2-tailed)
Contrast							
D_score	Assume equal variances	1	-.008703	.1147480	-.076	108	.940
	Does not assume equal variances	1	-.008703	.1049454	-.083	56.663	.934

Race IAT D Score analysis

Descriptive Statistics

Dependent Variable: D_score

Mindfulness_condition	MeaningThreat_condition	Mean	Std. Deviation	N
active	active	.401962	.5026566	26
	control	.380094	.4792843	25
	Total	.391242	.4865349	51
control	active	.509144	.4426643	30
	control	.517847	.3727420	31
	Total	.513567	.4052129	61
Total	active	.459381	.4701876	56
	control	.456350	.4252022	56
	Total	.457865	.4462384	112

Tests of Between-Subjects Effects

Dependent Variable: D_score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.423 ^a	3	.141	.702	.553	.019
Intercept	22.718	1	22.718	113.171	.000	.512
Mindfulness_condition	.416	1	.416	2.075	.153	.019
MeaningThreat_condition	.001	1	.001	.006	.938	.000
Mindfulness_condition * MeaningThreat_condition	.006	1	.006	.032	.858	.000
Error	21.680	108	.201			
Total	45.583	112				
Corrected Total	22.103	111				

a. R Squared = .019 (Adjusted R Squared = -.008)

Race IAT D Accuracy analysis

Descriptive Statistics

Dependent Variable: Accuracy

Mindfulness_condition	MeaningThreat_condition	Mean	Std. Deviation	N
active	active	95.064103	4.1561406	26
	control	92.699440	6.7450536	25
	Total	93.904954	5.6480110	51
control	active	93.166667	4.2570653	30
	control	93.709677	5.6798813	31
	Total	93.442623	4.9964696	61
Total	active	94.047619	4.2800588	56
	control	93.258678	6.1405561	56
	Total	93.653149	5.2836832	112

Tests of Between-Subjects Effects

Dependent Variable: Accuracy

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	81.699 ^a	3	27.233	.975	.407	.026
Intercept	974329.633	1	974329.633	34876.806	.000	.997
Mindfulness_condition	5.464	1	5.464	.196	.659	.002
MeaningThreat_condition	23.036	1	23.036	.825	.366	.008
Mindfulness_condition * MeaningThreat_condition	58.691	1	58.691	2.101	.150	.019
Error	3017.123	108	27.936			
Total	985440.996	112				
Corrected Total	3098.821	111				

a. R Squared = .026 (Adjusted R Squared = -.001)

Race IAT Testing Conditions

Descriptive Statistics

Dependent Variable: D_score

Observation	Condition	Mean	Std. Deviation	N
observed	double condition	.225795	.6669262	7
	mindfulness	.291211	.5076340	11
	meaning threat	.449985	.7283745	4
	double placebo	.597001	.4017652	10
	Total	.392307	.5396774	32
unobserved	double condition	.466865	.4314426	19
	mindfulness	.449930	.4625197	14
	meaning threat	.518245	.4037255	26
	double placebo	.480154	.3621375	21
	Total	.484088	.4038101	80
Total	double condition	.401962	.5026566	26
	mindfulness	.380094	.4792843	25
	meaning threat	.509144	.4426643	30
	double placebo	.517847	.3727420	31
	Total	.457865	.4462384	112

Tests of Between-Subjects Effects

Dependent Variable: D_score

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	.984 ^a	7	.141	.692	.678	.045
Intercept	15.247	1	15.247	75.083	.000	.419
Observation	.155	1	.155	.765	.384	.007
Condition	.587	3	.196	.964	.413	.027
Observation * Condition	.434	3	.145	.712	.547	.020
Error	21.119	104	.203			
Total	45.583	112				
Corrected Total	22.103	111				

a. R Squared = .045 (Adjusted R Squared = -.020)